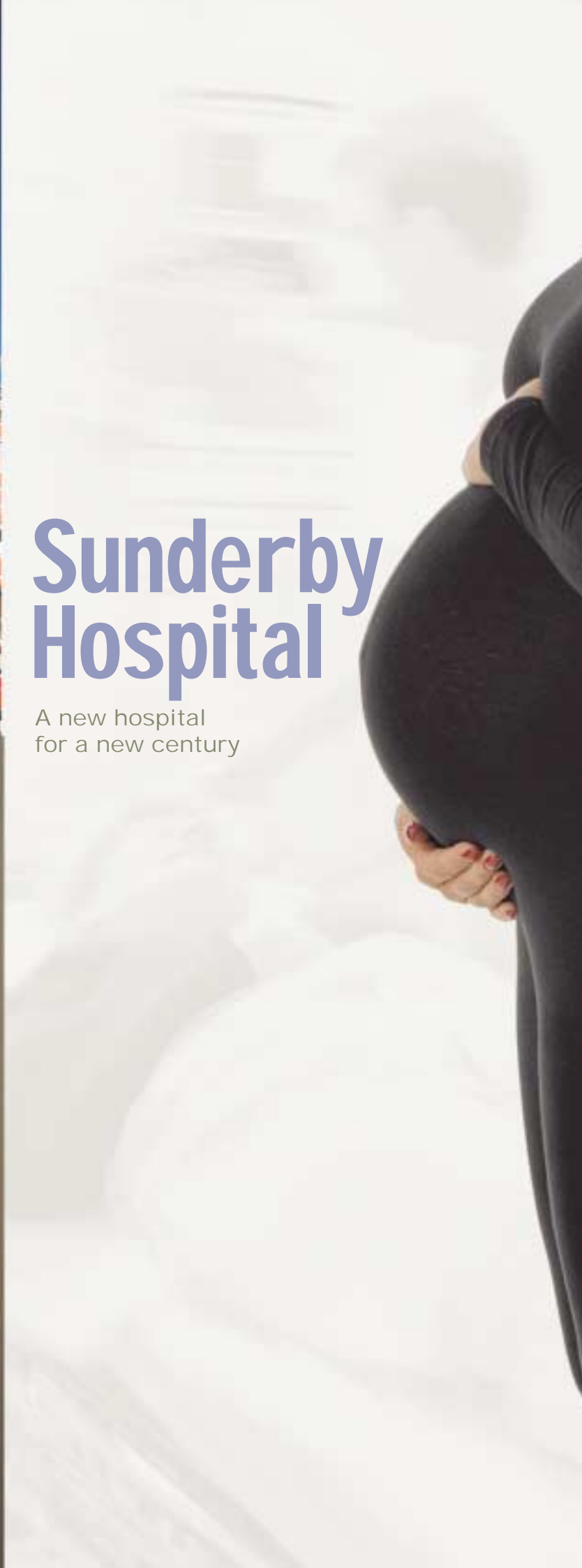




Sunderby Hospital

A new hospital
for a new century



A local hospital for Luleå and Boden and a regional hospital for all of Norrbotten, Sunderby Hospital opened in 1999.

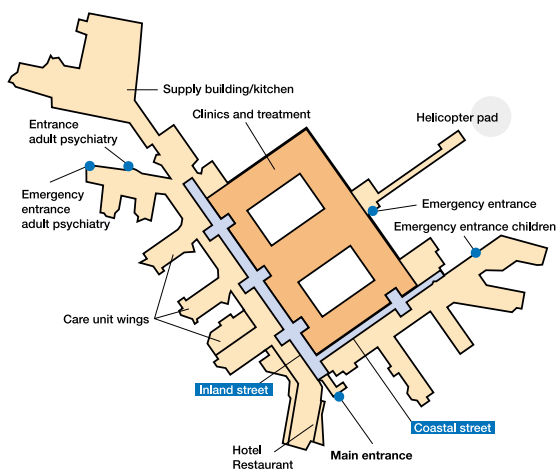


INTRO

A new approach to health care

Sunderby Hospital is unusual in many ways. It was created with both human and environmental well being in mind. This is evident both in the architecture and the technologies used, but its distinguishing feature is not visible to the eye. What sets Sunderby Hospital apart from other hospitals is that it presents possibilities for a completely new approach to providing health care.

The combination of a carefully planned layout and modern technology has made it possible to introduce a new way of working. New ways of ensuring better care for patients and a better working environment for staff.



Seconds that save lives

Units that work closely with each other are situated in adjacent buildings, of vital importance when patients who are critically ill have to be moved. Thanks to the hospital's internal data network, test results and X-rays can be transferred anywhere in a matter of seconds. And, if necessary, specialists at other hospitals can be easily contacted and consulted.

Always close at hand

Innovative methods of working and new ways of thinking also characterize the care of in-patients. For instance, most care units adjoin their respective admissions clinics. Windows are low, so that even patients confined to their beds can see out. Care units that have to work in close co-operation have been placed together; the children's unit and cardiology unit are two examples.

Intelligent solutions throughout

Sunderby Hospital is like a miniaturized community. The interior of the hospital is designed like a small town, with the admissions areas for nearly all



the clinics situated along the two main streets. The different care units are then reached via the footbridges and cross-streets.

Most of the rooms in the care units look out on to the extensive and peaceful parkland surrounding the hospital.



ENVIRONMENT



At rest and play

The surrounding parkland is an important and fundamental feature of a hospital, and the role of the park has been given a well-deserved renaissance in the Sunderby project. In harmony with nature, one can find inspiration, power and strength. Here, the scenery of Norrbotten has inspired the landscape architect. The heart of the park is an artificial lake, with both a jetty and a rowboat. The park also features a pond and meadows.

The children have their own park, situated near the children's care units, and there is something for children of all ages. The different playgrounds offer an exciting combination of recreation equipment and playing fields. New adventures await among the mounds and the trees, and there are

edible plants too. There are also large open spaces, slopes for sleigh riding, street basketball and other games suitable for the older children.

Colour and design

Appealing environments have a beneficial effect on our sense of well-being. Great care has been given, therefore, to the choice of colours and design. To help both patients and nursing staff in their work, the architects, designers and artists have created an environment that is far different to those in traditional care institutions.

The Norrbotten scenery has inspired both choice of colour and manner of expression. Every street, block and meeting place has a particular touch from the Norrbotten palette. And every piece of artwork carries a message of its own. In this way, all the individual details have combined to form a peaceful and harmonious whole.



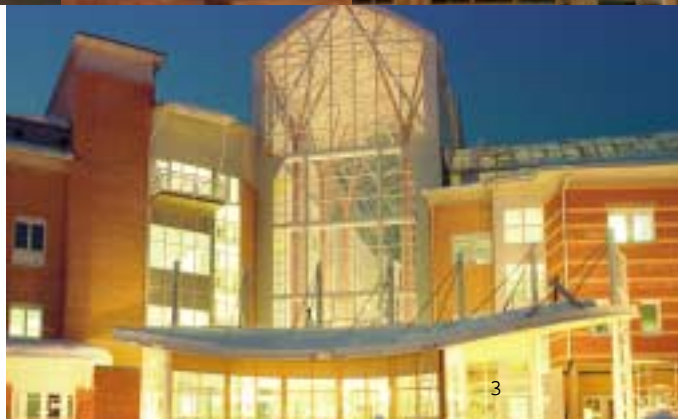
Caring about the environment

Sunderby Hospital is characterized by an environmentally friendly way of thinking. Everything that can be recycled is recycled – even body heat.

By using heat exchangers, about 75% of all heat that is created by people, light fittings, computers and medical equipment can be re-used. Other heating is supplied by a district heating system that uses surplus gases and waste heat from the steel industry. In case of a supply failure, the hospital's own boiler system can take over.

The waters of the Lule River are used for cooling the different rooms. In this way, the use of freon (chlorofluorocarbons), that damage the ozone layer, is avoided. The unpolluted cooling water is then returned to the river.

The hospital also has an efficient waste sorting system, and the amount of waste that has to be disposed of is kept to a minimum.



NEAR



Efficient layout

The layout of the different units has been planned with great care. No time can be lost when moving patients in an emergency, and no one who is very ill should have to be moved through endless corridors or public rooms. That is why the care units have been built next to the admission clinics. For example, surgery patients are cared for on the floor where the operating theatres are situated. The X-ray unit, operating theatres and the laboratory have been placed in the centre of the hospital, within easy reach of all the clinics.

All laboratory work is carried out in one location, which broadens the proficiency of the staff and makes work less vulnerable in case of absences. A lift for sending tests to and from the laboratory is connected directly to the emergency admissions unit, operating rooms and intensive care units.

The well-developed layout of the hospital is a result of many years of dialogue, during which the experience of the staff and the skills of the architects have been combined and implemented

to the full. In this way, new working methods have been created in which all aspects of health care have been integrated.

The emergency care system is an example of this.

When time is precious

The ambulance bay and emergency admissions unit are separated from the hospital's main entrance, and the helicopter pad can be reached through a covered and heated passageway.

Next to the ambulance bay there is a decontamination room for victims of accidents involving chemicals, and in the cellar there is a pressure chamber. Two emergency lifts allow direct access to the X-ray unit, intensive care rooms and operating theatres, which are situated directly above the emergency entrance. In order to separate emergency cases from planned treatment cases there is an emergency admissions unit. After examination by a specialist, the patient can be either treated immediately or moved on to another unit. The emergency care unit has 28 beds and is situated directly next to emergency admissions unit.



SERVICE



The patient's best interests

Modern technology and medical development have made it possible to carry out treatment and operations without the patient having to remain in hospital afterwards. A 40-room hotel accommodates patients who have come a long way and patients who do not require round-the-clock care. Relatives and other visitors can also stay overnight at the hotel.

The patients' rooms have 1 to 3 beds, and are designed so that each patient can have a private corner to himself or herself. All rooms are equipped with a toilet and shower and next to every bed, there are sockets for radio,



TV and a telephone. There are also connections for advanced technical equipment, which means that some of the examinations and treatment can be carried out in the room.

A choice of four dishes

At Sunderby hospital, patients can choose what they want to eat and when. Meals delivered to the rooms are almost ready to eat. The latest technology incorporated into the meal trolleys allows the final stages of cooking to be done individually. This means that meals are served freshly prepared and at the most appropriate time.

The patients can choose between four different dishes, both at lunchtime and in the evening. 30 or more special

dishes are served for patients on special diets. Each care unit compiles its own orders, which are then sent to the kitchen.

In the kitchen, food is pre-cooked and then chilled before being sent out to the care units where it is finally prepared. The kitchen, restaurant and cleaning are managed on contract.



TECHNOLOGY

Networks

The Norrbotten County Council was early in building up an internal data network. This means that local clinics and hospitals in the county can now communicate effectively with each other. Information required for administering correct treatment is available within seconds, but only accessible to employees with the necessary security clearance.

A nearly paperless hospital

Technology in use at Sunderby Hospital offers many advantages, both for the patients, the staff and the environment.

There is no traditional casebook or records archive at the hospital, and the use of paper has been kept to a minimum. However, a totally paper-free hospital is not viable, and all incoming documents, referrals from private doctors, etc. are scanned into the computer system and stored digitally.

Electronic records

The handling of records has been simplified, as they are all stored in the County Council's computer system. Another advantage is that they are always accessible, but only to authorized staff. As an extra security precaution, all retrievals from the system are logged for future inspection.

From the electronically stored patient records, the staff can access ECG results, laboratory test results, X-ray images and other information.

Bedside technology

On many of the care units, each care team has a laptop computer that can be

used on the rounds. Via a transmitter, they can use wireless communication to access records, X-ray images, test results and other information that is necessary for providing the best possible care. The doctors can even send prescriptions digitally to pharmacies in the county. Thanks to this bedside technology, patients can be quickly given results from different medical examinations and tests or other information from their journals.

Digitalized X-ray unit

The X-ray unit is completely digitalized, which means that computers are used both for storing images and viewing them. X-rays can be sent immediately either to the patient's doctor in the hospital or the patient's care centre. If necessary, doctors at other hospitals can also view the images and be consulted about them. Thanks to new technology, chemicals that imply a health or environmental hazard are no longer required for film development.

Monitoring systems

The hospital has a monitoring system that registers all vital data about patients who are critically ill. The readings are registered directly in the patients' records files.

Direct contact with ambulances

Both daily routines and assistance at accidents are managed from the communications centre at the emergency admissions unit. Staff are also in direct contact with the ambulances. By monitoring information about a patient's condition, for example from ECG read-outs, preparations can be made



for treatment and, in some cases, treatment can begin before arrival at the hospital. New technology also means that heart patients arriving by ambulance can be quickly transferred to the intensive care unit where a specially trained team of cardiologists can take over.





The children's unit

Children have their own wing in the hospital, so that their stay can be made as comfortable as possible. Everything needed for treating children is concentrated here; they even have their own emergency admissions centre.

All children are given treatment in the children's wing, no matter whether they have broken a leg or have kidney trouble. The specialist care they need is administered in their own unit. The staff work in small teams, and the rooms are furnished to suit the needs of the children and their families. In the maternity unit, most rooms are of hotel standard, fully furnished for the whole family and include a TV, telephone and bathroom.



The maternity unit, delivery unit, and intensive care unit are situated next to each other and the operating theatres can be reached quickly via a special footbridge. One of the theatres is reserved for Caesarean-section deliveries.

The close proximity between the units has many advantages. For instance, parents and children can be kept together in case the child needs extra attention.



EXAMPLES

Heart care unit

Even heart care forms its own unit, comprising an intensive care unit and an aftercare unit. Patients who have suffered from heart attacks or who have had X-rays taken of their coronary arteries can be cared for here. The unit that examines different heart conditions, for example using active ECG tests, is situated immediately next to the heart care unit.

Treatment of a heart attack can begin during the ambulance journey. The patient is then taken directly to the intensive care unit, which is linked to both the X-ray unit and the emergency unit.

Adult psychiatry

The adult psychiatry unit at Sunderby Hospital is mainly for patients who require immediate specialist assistance. The unit receives patients from Luleå, Boden and eastern Norbotten (Kalix, Haparanda, Övertorneå, and Övertorneå) and during emergency hours, patients from Piteå as well.

The unit has its own beds and an emergency and specialist unit where patients are examined and treated. An important aim is to try to separate patients as little as possible from normal family and social life. For this reason, there are local psychiatric units in Luleå, Boden and Kalix, with their own beds and mobile care teams.

Great consideration has been taken to ensure the patients' independence when planning care environments. Patients who are admitted to the emergency psychiatric unit can, in most cases, be offered a room of their own.



FACTS

Sunderby Hospital in brief

Operations and units

Emergency care

Emergency admissions, emergency care, ambulance service, day surgical unit, intensive care, operations, sterile unit and post operative care.

General surgery/urology

General surgery, urology unit, surgical unit/endoscopy unit, surgical care.

Children's unit

Children's and young people's medical unit, rehab, child/youth psychiatry, play therapy, neuro-psychiatric unit, psychiatric clinics in Boden and Luleå, school.

Women's health unit

Gynaecology clinic and care unit, maternity unit, delivery unit.

Laboratory

Clinical chemistry laboratory, blood units in Sunderbyn, Luleå and Boden, microbiology laboratory, pathology/cytology department and infection hygienics.

Medicine

Infection, heart care, dialysis, dietician, dermatology, infectious diseases, lung unit, medicine, kidney, occupational medicine and medicine care units.

Orthopaedics

Orthopaedic unit and care units.

Radiology/clinical physiology

X-ray unit, skeletal/dental/nuclear medicine, CT/MR, ECG, EEG, EMG, clinical physiology.

Rehabilitation and rheumatology

Geriatrics and rehabilitation, rheumatology, physiotherapy, occupational therapy, speech therapy, counselling, Sandträsk rehab centre. Neuro and pain rehabilitation, care units.

Adult psychiatry

Emergency admissions, admissions centre and care. Local psychiatric care in Luleå, Boden and Kalix. Abuse and addiction centre.

Eyes

Eye clinic/eye operations and care units. Sight clinic.

Ear, nose and throat unit, and jaw surgery

Ear unit and care units. Jaw and mouth diseases, care units. Hearing clinic, technical and educational audiology.

Artistic decoration

The following artists have participated in the artistic decoration of the hospital: Kerstin Hedström, Agneta Andersson, Marianne Öqvist, Elisabeth Englund, Eva-Stina Sandling, Lennart Holmbom, Dan Lestander, Torsten Renkvist, Ulf Rollofs and Sara Edström.

Building areas

Total floor area: 78,100 m²
Ground floor area: 25,000 m²
Exterior facing area: 37,000 m²
Artificial lake: approx 54,000 m²
Hospital park: 340,000 m²

Construction figures

Cost: MSEK 1,579
Architect: Tage Isaksson, FFNS Architekt AB

Engine heaters

Motor-heater coupons can be purchased at the hospital kiosk.

Environmental aspects

- All building materials have been allergy tested and have known contents
- Environmentally-friendly cooling of technical equipment installed
- Electromagnetic fields have been screened off
- Surface water from the car park is led off for purification
- The hospital is heated using district heating
- Waste is sorted into different categories
- Environmental classification has been determined with regard to dampness, slippery surfaces, sound levels, air particles, upholstery and fire safety
- Routines for cleaning ventilation ducts established
- Low mercury content in fluorescent lighting stipulated

- Sewage pipes are accessible, exchangeable and recyclable
- Nickel-free door handles fitted on all doors

Facts and figures for 2001

- Visits to doctors: 119,117
- In-patients: 27,060
- Days in care: 157,964
- Average time in care: 4.7 days
- Number of births: 1,119 (1,140 babies were born, including deliveries of twins and triplets).
- Study visits: 5,500 visitors

Hospital capacity

- Beds 441
- Operating theatres 19
- Dialysis units 13
- Intensive care 6
- Intensive care for heart patients 9
- Delivery rooms 7
- Restaurant with approx 200 seats
- Lecture hall with 150 seats
- Parking space for approx. 1,050 cars

Hospital chapel, schedule

- Midday prayers, Monday to Friday
- Holy Communion, Thursdays
- Divine services, Sundays

Hotell Vistet

40 double rooms, of which 10 are suitable for disabled persons. The rooms are of hotel standard, with a shower, WC, TV and telephone in each room. The hotel reception desk is next to the hospital's main entrance.

In Sunderby Hospital there are:

- Rooms 3,700
- Lifts 28
- Toilets 900
- Washbasins 1,700
- Autoclaves 7
- Plasterboard 300,000 m²
- Concrete 30,000 m³
- Windows 3,000
- Optical fibre for data communication 740 km

Library

- Monday – Thursday, 10.00 – 15.00
- Friday, 11.00 – 15.00
- Fiction and non-fiction
- Children's books
- Daily newspapers and weeklies
- Talking books on cassette
- Access to the Internet

Pharmacy

Open: Mon – Fri, 8.30 – 17.00

Public transport

- Bus: LLT (local transit) www.llt.lulea.se
- Länstrafiken (regional transit) www.ltnbd.se
- Rail: Tågkompaniet www.tagkompaniet.se

Reception area

Luleå and Boden, population approx. 100,000
Norrbotten County, total population approx. 250,000

Reception/Information

Information for patients and visitors is given at the reception desk. The desk is open from 07.15 until 17.00. Hotel rooms and conference facilities can be also booked here.

Situation

Sunderby Hospital is situated approximately 15 km from Luleå and 20 km from Boden.

Staff

- Total number of employees: 2,347
- Stand-in staff, included above: 231
- Average age: 45 yrs
- Full-time employees: 1,801
- Doctors: approx. 239
- Nurses: approx. 826
- Assistant nurses/assistant children's nurses: approx. 599
- Administrative personnel: approx. 230
- Works and maintenance personnel: approx. 40
- Others (dental care staff, physiotherapists, speech therapists, etc.): approx. 413

Time line

- 1989 – Decision to revise health services
- 1991 – Decision to build a hospital
- 1993 – Decision to build in Sunderbyn
- 1994 – Review of decision, earlier decision upheld
- 1995 – Building work starts
- 1999 – The hospital is opened