Landspitali

Functional Development Plan
Step 1: Vision, goals and strategy
04.01.2001

Index

Page

1. Introduction

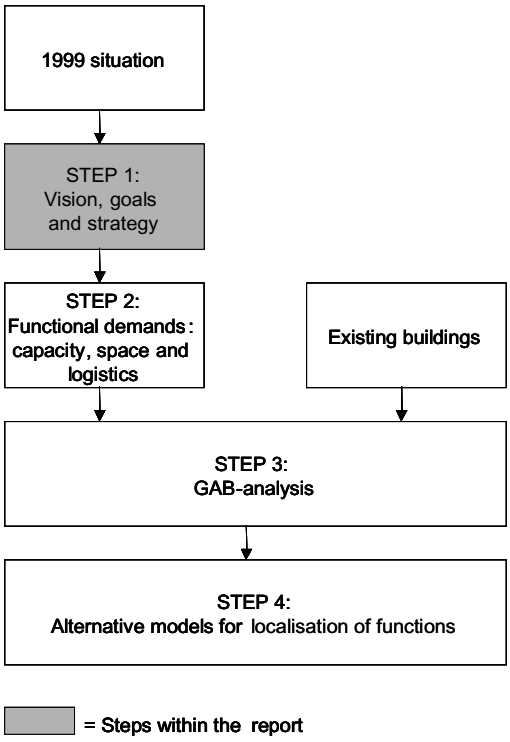
Landspitali and Sjukrahus Reykjavikur have merged to one hospital: Landspitali University Hospital (LSH).

The new hospital is located at various building complexes in the Reykjavik area, where the two main locations are Hringbraut and Fossvogur. Other important locations are Vifilstadir, Kopavogur, Kleppur, Grensás and Landakot.

In order to create the framework for the new university hospital for Iceland, the Management has engaged Ementor Denmark A/S (previously Avenir Management Consulting) to assist in the process and to prepare a Functional Development Plan for LSH:

- A long-term (up to 2020) integrated plan for the functional development of the hospital, which supports the vision, goals and strategy of the hospital.
- A model for the physical infrastructure and logistical demands

The planning process is described as follows:



A Functional Development Plan for Landspitali (LSH) has to be based on the overall strategy for the hospital.

The first step is to describe vision and goals for the future hospital, and how this can end up into a strategy for the hospital functions, patient profile and volume.

Focus of the Functional Development Plan is the hospital sites at Hringbraut and Fossvogur, where all the main functions are located. The locations at Vifilstadir, Grensás, Kopavogur, Kleppur and Landakot are also considered, because there might be an exchange of functions between the locations and a total solution for psychiatry also has to be considered.

These issues where treated in a workshop held at October 25, 2000. At the workshop the management group of the hospital discussed these issues and made priorities for the further planning process.

This report is concentrating on the clinical issues, which means the specialities and the clinical functions like emergency. University functions and service functions are not handled here.

The results and recommendations in this report are based on

- The workshop report: Landspitali. Functional Development Planning Workshop of October 25
- A collection of patient data from the hospital in 1999
- A population forecast for Iceland and Reykjavik area
- Interviews with all clinical department leaders as well as visits at the hospital locations
- The Functional Development Plan, developed for SHR in 1999

This report will summarise the results of Step 1 of the Functional Development Plan, and make recommendations for the future patient volume as a base for the further planning and some of the limitations and possibilities in the main building complexes at Hringbraut and Fossvogur.

2. A forecast for the future

2.1. Present patient statistics

The hospital has its clinical specialities distributed on a number of locations:

- Hringbraut (H): the main building of the former Landspitali, with most of the somatic specialities and geriatrics and psychiatry
- Fossvogur (F): the main building of the former Sjukrahus Reykjavikur, with somatic specialities (and traumatology) and geriatrics and psychiatry
- Vifilstadir (V): pulmonology and allergic diseases and dermatology, venerology and some psychiatry, as well as long term care
- Grensás (G): neurology and rehabilitation
- Kopavogur (Ko): hospice for oncology/haematology
- Landakot (L): geriatrics
- Kleppur (Kl): Psychiatry
- Other locations: Hátun, Arnarholt, Dalbraut, Kleifarvegur, Teigur Flókagötu, Hvítaband, Lágmúli, Laugarásvegur, Reynimelur, and Gunnarsholt.

In *appendix 1* the 1999 patient data for each clinical speciality in the different locations are summarised as follows:

- Inpatient statistics: admissions, bed days, average length-of-stay (LOS) and number of used beds with 85% occupancy as well as number of existing beds
- Day patients: number of appearances
- Outpatients: number of visits (planned visits in the specialities)

The statistics can be summarised as follows:

1999	Inpt	Day pt.	Beds (85%)	Present no. beds
H&F, som	25,904	20,897	495	552
H&F, psych	1,406	6,045	72	69
H&F total	27,310	26,942	567	621
Outside H&F somatic	3,494	5,678	216	239
Outside H&F psychiatry	1,271	61,256	221	209
Total, somatic	29,398	26,575	711	791
Total, psychiatry	2,677	67,301	293	278
Grand total	32,075	93,876	1,004	1,069

Looking at the total bed capacity, it is shown that approx. 1,000 beds of the present 1,070 physical beds are used efficiently today (85% occupancy).

This means that there is 7% gap until the total bed pool of today's situation is used.

This surplus is especially found in the somatic departments of the hospital, where approx. 710 beds are used of the physical 790 beds today. The psychiatric beds, however, are used more than 100%.

In the following table we will look at the overall somatic patient statistics as well as the relations between the different figures:

- Day patients (excl. dialysis)
- Outpatients (excl. radiation therapy)
- Inpatient activity in LSH (H&F)

We try to compare these key-figures with the figures of the new hospital in Trondheim (RIT 2000), where ambitious but realistic goals were set for day and outpatient activity:

	H&F (1999)	RIT 2000(2010)
Inpatients	24,900	31,500
Day patients	17,200	27,000
Outpatients	121,500	202,000
Day patient/ Inpatients	0.7	0.9
Outpatient/ Inpatients	4.9	6.4

Looking at these figures the planned activity in Trondheim related to day and outpatients is higher than in LSH.

If you look at the differences between the specialities, you get the following:

Day patient/ Inpatients	**H&F (1999)**	**RIT 2000(2010)**
Medicine	0.9	1.1
Surgery	0.3	0.8
Women	2.3	0.7
Children	0.5	0.5

The day activity in LSH within gynaecology/obstetrics and children is higher or similar to that in Trondheim, but especially within surgery there is a difference. There are of course a lot of differences between the two hospitals, which make a comparison somewhat questionable.

However, some of the differences can perhaps be explained by

- In Norway there is a significant pre-diagnostic outpatient activity in the hospital ambulatory care before eventually admittance.
- Many patients in Norway are also discharged from the ambulatory care without admittance.
- Patients in Iceland are pre-diagnosed in private practices often/mostly run by the hospital doctors. These doctors hereafter admit the patient to the hospital department.
- In Norway there has been a significant increase in day-care, especially day-surgery. This can be combined with an over-night-stay in a patient hotel.
- In Iceland most of the day-care is taking place in the private practices.

- The reimbursement principle does not promote these services in the hospitals, as the private doctor will be fully reimbursed for the activities in private practices, and in the hospital they are on a fixed salary, or the payment is going to the hospital - and not to the department.

- However, as stated by the interviews: in some cases the hospital physicians/departments are paid by a "fee for outpatient and day patient services", like urology in Fossvogur, and in these cases there is a higher outpatient and day patient activity in the department.

2.2. Simple extrapolation of present situation

The hospital LSH is the main hospital in Iceland, and serves in principle all Iceland with highly specialised functions. This is especially the case for psychiatry, where the department in Reykjavik serves the whole country. However, the main base for the somatic hospital is the population in Reykjavik.

Looking at the population developments in Iceland and the number of people living in the Reykjavik area we get the following picture:

	1999	2020	Change in %
Iceland	279,908	311,862	11%
% in Reykjavik	60%	73%	22%
Reykjavik	167,945	227,659	36%

Using these statistics for a simple extrapolation, and transferring the present behaviour into the future, psychiatry will develop with 11% and the somatic specialities with 36%. In number of hospitals beds this means:

	1999	2020
H and F beds: (85%)		
Somatic	495	673
Psychiatric	72	80
H and F total	567	753
Outside H and F: beds (85%)		
Somatic	216	294
Psychiatric	221	245
Outside H and F, total	711	539
LSH, total beds (85%)	1004	1292

The above table indicates an increased need for approx. 300 beds to fulfil the present functions.

To meet this challenge, and avoid a significant increase in investments and operational costs, LSH must make patient care more efficient, reduce the number of admitted patients, and discharge patients earlier to lower levels of care and primary Health Care Sector.

3. Strategic statements

In the following some of the major strategic issues for the future hospital will be summarised, i.e. goals and strategies with respect to

- Location of functions
- Patient care models in the future
- Organizing the future emergency function

3.1. Location of functions

How to locate the clinical hospital functions giving the existing hospital complexes and the potential for building development is one of the main issues of the Functional Development Plan, and You will not have an answer before the planning is finished. However, some major indications can be very helpful in the planning process.

The further planning should be based on following strategic goals:

- Concentrate the acute care activities and expensive beds in Hringbraut and Fossvogur, and reduce the number of these beds to a minimum
- Increase the number of beds for rehabilitation, geriatrics and psychiatry outside Hringbraut and Fossvogur
- Exchange functions and beds between the location as follows:
    - Move acute neurology from Grensás to Hringbraut/Fossvogur
    - Move dermatology and venerology in from Vifilstadir/Dverholt to Hringbraut/Fossvogur
    - Move pulmonary and allergic diseases in from Vifilstadir to Hringbraut/Fossvogur
    - Move rehabilitation and long term beds out of Hringbraut/Fossvogur
    - Move some geriatric beds out of Hringbraut/Fossvogur
- Use all Grensás for inpatient rehabilitation after inpatient stay in Hringbraut/Fossvogur and use Kopavogur for outpatient and day patient service

3.2. Patient care models in the future

To decrease the future need for hospital beds and to avoid a similar increase in costs, patient care will be transferred to more day and outpatient care than what is seen today.

- Transfer some of the inpatients to day care
    - Surgical patients: 25%
    - Medical patients: 22%
    - Psychiatric patients: 24%
- Transfer some of the inpatients to observation beds in the admission phase
    - Surgical patients: 20%
    - Medical patients: 30%
    - Psychiatric patients: 19%
- Transfer some of the inpatients to rehabilitation care and/or long-term care, which in practical term means an earlier discharge to rehabilitation/long term care (step down unit principle)
    - Surgical patients: 19%
    - Medical patients: 30%
    - Psychiatric patients: 24%

Other suggestions are

- Establishment of a patient hotel on site of the main acute hospital
- Increase outpatient services
- Increase home health care services
- Reconsider the reimbursement system

3.3. Organizing the future emergency function

During the strategic planning process it has been discussed how to organise the emergency function of Landspitali in the future.

In principle there are only two main scenarios:

- One emergency function in one house, which means to have all acute admissions and most of the acute specialities in one house and to establish the elective services in the other house
- To establish an emergency function on both houses, which means to admit acute patients in both houses, but only trauma in one house

Clearly there is a preference in the management group for gathering all acute services in one house.

However, if you have to consider some likely criteria for development of a public service organisation:

- To use the existing building where appropriate and to keep the investment cost at a reasonable level

- To create an environment where there is a potential for increased efficiency in operations

Then you must realise the following:

- Landspitali will have to stay with all major somatic functions in the two main complexes of today (Hringbraut and Fossvogur)

Giving above options there are only one possible solution with respect to emergency:

- You must split acute admission on the two houses, where you have

    - An emergency function for trauma in one of the houses (the ER-House)

    - And defined acute admissions in the other house (the Non-ER-House)

- In the ER-House you will have: the emergency for trauma patients and abdominal surgery, neurosurgery, hot orthopaedics, and perhaps vascular surgery, thoracic surgery, and neurology and some of the acute internal medicine

- In the Non-ER-House you will have: Gynaecology/obstetrics, paediatrics, oncology, haematology, psychiatry, internal medicine, cold orthopaedics, urology, ENT, Eye

The exact spilt of surgical and medical specialities has to be developed and analysed in the coming planning.

Giving the present buildings and present location of functions, the naturally solution is that Fossvogur serves as the ER-House and Hringbraut as the Non-ER-House.

4. A model for future patient volume

In this chapter a model for the future patient volume at Hringbraut and Fossvogur is developed, giving the results of the workshop.

The model is based on the following premises:

- Basic statistics are the 1999 numbers shown in appendix 1 and the population development described in chapter 2
- Neurology, pulmonology, allergology, dermatology, venerology are moved into Hringbraut/Fossvogur
- Rehabilitation is moved out from Hringbraut/Fossvogur
- All somatic patient data are simple extrapolated due to population development (36%) and psychiatric with 11%
- Inpatients are transferred to day care with a ratio of
    - 25% for surgical specialities (except vascular surgery, neurosurgery and thoracic surgery)
    - 20% for medical specialities (except neonatalogy and infectious diseases)
    - 20% for psychiatry
- Inpatients are transferred to observation unit with a ratio of
    - 20% for surgical specialities (except vascular surgery, plastic surgery, ophthalmology, ENT and thoracic surgery)
    - 30% for medical specialities (except neonatalogy, dermatology, and neurology)
    - 20% for psychiatry
- Inpatients are discharged earlier to rehabilitation/long term care. The ratio discharged earlier are
    - 20% for surgical patients (gen. surgery and orthopaedics)
    - 25% for medical patients (gen. int. medicine, gastro-enterology, cardiology, rheumatology, pulmonology, haematology and oncology)
    - 25% for psychiatry
- The groups of patients transferred to day care or observation are more “light” in the sense of length of stay. In our calculations they lie half of the nights of today’s average.

- It is assumed that the light inpatients of today, which will be transferred to daycare in 2020, will on average equalize *two* appearances as a day patient and *one* clinic visit as an outpatient. Day patient appearances and outpatients clinical visits increase accordingly.

- Somatic inpatients discharged earlier to rehabilitation/long term care, are assumed to reduce their stay with three days.

- Psychiatric inpatients discharged earlier to rehabilitation/long term care, are assumed to reduce their stay with five days.

- An average geriatric patient today lies 27 days. We recommend that this LOS in Hringbraut/Fossvogur be reduced to 14, by relocating long-term stays to other locations.

- We use Icelandic best practice for LOS

- All data, extrapolations and results are shown in appendix 2

4.1. Results

4.1.1. Inpatients

Based on the above consumptions, Hringbraut/Fossvogur will need the following number of beds in 2020:

- 538 beds compared with the 621 beds today, divided in 481 somatic and 57 psychiatric beds.

We have estimated a need of 268 somatic and 248 psychiatric beds outside H/F, compared with 239 somatic and 209 psychiatric beds.

4.1.2. Hotel

Somatic day-patients will need approximately 37 beds in hotel, if we assume1½ overnight for all new day patients.

4.1.3. Observation

Inpatients that move to observation will need 42 somatic and 2 psychiatric beds in observation in addition to present beds.

4.1.4. Day patients and outpatients

Increases in day-patients and outpatients in Hringbraut and Fossvogur are shown below:

	1999	2020	Increase
Som. day pt	12,735	32,471	155%
Psych. day pt	6045	7362	22%
Som. outpt.	129,446	183,076	41%
Psych. outpt.	20,059	22,662	13%

5. Functionality, organisation and logistics

5.1. Clinical specialities

The hospital has organised the clinical specialities into divisions. These are paediatrics, gynaecology/obstetrics, internal medicine, surgery, geriatrics, rehabilitation and psychiatry. These specialities are all "owner of" the patients as inpatients, day patients or outpatient.

The present distribution of these specialities at the locations at Hringbraut, Fossvogur, Vifilstadir, Grensás, Kopavogur and Landakot are shown in the table below.

Present localisation of clinical specialities

Specialities with in-patients

Clinical specialities	Hringbraut	Fossvogur	Vifilstadir	Grensás	Kopavogur	Landakot
Paediatrics	Gen. paed, surgical paed. neonatalogy	Gen. paed, surgical paed. .				
Gynaecology-obstetrics	Gynaecology obstetrics					
Internal medicine I	Endo, Rheum, card,pulm, gastro, nephro, inf, neuro	Gen. int. med, cardiology, infectious dis.	Pulmonology Dermatology	Neurology		
Internal medicine II	Oncology, haematology	Oncology, haematology			Hospice	
Surgery	Gen. Surgery, ortho, uro, plastic, eye, thoracic	Gen. Surgery, ortho, uro, ENT, neuro, vascular				
Geriatrics	Geriatrics	Geriatrics	Geriatrics			Geriatrics
Rehabilitation			Long term rebilitation	Rehabilitation		
Psychiatry	Gen. psych, drug, rehab	Gen. psych	Long term psych			

Most of the somatic specialities are located at Hringbraut and Fossvogur, and some are located at both places: paediatrics, cardiology, general internal medicine, oncology, haematology, general surgery, orthopaedics, urology, geriatrics and psychiatry.

Based on the interviews conducted with the department leaders we will in this chapter summarize the present situation and the development trends for the specialities with respect to

- Present functions and location
- Organisational aspects and most important cooperation partners
- How to make care more efficient

5.1.1. Paediatrics

Paediatrics consists of general paediatrics as well as neonatology and paediatric surgery (all surgical children).

Paediatric is located at both Hringbraut and Fossvogur, but neonatology only at Hringbraut.

Admission of children is taking place in both departments except for traumatic children who are admitted at the emergency in Fossvogur.

For the future paediatrics could be one department at one location, and the most important cooperation partners are obstetrics, orthopaedics, ENT, neurosurgery and emergency.

A new children's hospital is planned at Hringbraut, which makes it naturally to gather all paediatrics there.

5.1.2. Gynaecology-obstetrics

Gynaecology-obstetrics is located at Hringbraut, and includes an IVF-function with 3-400 treatments per year, gynaecologic oncology and a delivery unit with approx. 2,900 births per year.

The department has admittance of patients during daytime, and could reduce number of admitted patients with use of 3-4 observation beds.

The day care activity is rather big, especially with respect to day surgery, and the day activity could be expanded with a number of obstetric patients (observation patients) combined with 8-10 hotel beds.

The high day care activity can be explained by a small private sector in gynaecology and no private sector in obstetrics.

The department cooperates with surgery, urology and clinical chemistry, and location at Hringbraut seems reasonable, together with the children hospital.

5.1.3. Internal medicine I

Internal medicine I includes general internal medicine, gastro-enterology, nephrology, endocrinology, pulmonology and allergic diseases, cardiology, rheumatology, infectious diseases, dermatology-venerology and neurology.

Most of these specialities are located both at Hringbraut and Fossvogur, and most of the department leaders from the sub specialities also wanted to keep it that way.

However, some of the specialities are very small and have only few physicians, and could benefit from gathering of staff and patients.

Improvement in efficiency can be obtained by more use of observation beds in the hospital, and by transferring patients to sub acute care, rehabilitation and nursing homes.

General internal medicine is located at both Hringbraut and Fossvogur, and includes at Fossvogur also gastro-enterology, nephrology, endocrinology and pulmonology. At Hringbraut the sub specialities are divided into sections.

Gastro-enterology is located at both hospitals today, and cover in-hospital services, outpatient clinics and gastrointestinal endoscopies.

The most important cooperation partners are gastrointestinal surgery, oncology, laboratory services and dieticians.

Nephrology is located at both hospital units, in Fossvogur as part of internal medicine. The haemodialysis function is located at Hringbraut, at Fossvogur only acute dialysis is performed in the intensive care unit.

It is not necessary with nephrology at both locations in the future, but a specialist must be available where emergency is located.

Endocrinology includes diabetes clinic, and is as such located at both Hringbraut and Fossvogur. In Fossvogur there is a lipid clinic and a bone density clinic.

Most of the inpatients are diabetes patients, but day and out patient clinics are of special importance to endocrinology.

Pulmonology and allergic diseases are located at Hringbraut, Vifilstadir and Fossvogur (as part of the internal medicine).

At Vifilstadir there are about 30 beds for pulmonology and an outpatient clinic for allergic diseases. There could be some increase in day care, but homecare could be even more efficient as a gatekeeper function.

The function located at Vifilstadir wants to move to Hringbraut.

Cardiology is located at Hringbraut and Fossvogur. Both locations have separated cardiac departments; each with heart observation units and a common “invasive” team with 2 invasive labs in Hringbraut and 1 planned at Fossvogur.

Cardiology must be represented at both locations and close to emergency. However, pre hospital identification of acute cardiac/thoracic patients is possible, and a heart/lung centre - also for admission - might be a solution.

For the future patient hotel and step-down care will be of increasing importance, and number of inpatients will decrease accordingly.

Rheumatology is located at Hringbraut together with the nephrology ward. The speciality includes a clinic for bone density, a function also located at Fossvogur. At Fossvogur there is a rheumatologic consultant. There is a centre for rheumatologic research at Hringbraut.

Most of the patients are elective.

Rheumatology cooperates with infectious diseases, haematology, immunology and rehabilitation at Grensás.

There should only be one department with localisation at Hringbraut, but with a consultant at Fossvogur.

Infectious diseases are located at both hospitals, have beds for isolation and outpatient clinic for hepatitis and HIV patients.

An important cooperation partner is the laboratory services.

The speciality should be gathered in one department.

Dermatology and venerology is located at Vifilstadir with 12 beds, and with outpatient services at Hringbraut. Surgery is performed at Hringbraut, and at present the speciality has access to some beds in Hringbraut.

The department wants to move into one of the main hospital sites.

Neurology is located at Hringbraut and Grensás. The department also includes Neurophysiology, located in Hringbraut and Grensás.

Acute admission (mostly stroke patients) is taking place at the emergency departments in Hringbraut and Fossvogur, and the Fossvogur patients are transferred to the stroke unit Grensás.

The most important cooperation partners are emergency and rehabilitation. There should only be one department for neurology, located together with the emergency.

5.1.4. Internal medicine II

Internal medicine II covers the specialities oncology and haematology as well as radiation therapy and physics.

Oncology and haematology are located at both Hringbraut and Fossvogur, and a hospice function for terminal cancer patients is located in Kopavogur.

In Hringbraut oncology and haematology are separated departments, where oncology includes radiation therapy and haematology includes a laboratory.

In Fossvogur oncology and haematology are part of internal medicine.

Both units in Hringbraut and Fossvogur are rather small in numbers of patients and staff, and could benefit from gathering of functions, for instance for further sub specialisation.

Oncology and haematology cooperate with most of the other specialities, but do not need to be located in the same hospital site as emergency.

5.1.5. Surgery

Surgery covers the specialities general surgery, vascular surgery, urology, plastic surgery, orthopaedics, thoracic surgery, neurosurgery, ophthalmology and ENT.

Vascular surgery, neurosurgery and ENT are only located at Fossvogur, and thoracic surgery and plastic surgery only at Hringbraut. General surgery, orthopaedics and urology are located at both hospital sites.

General surgery is located at both hospital sites. Fossvogur has the majority of the accidental surgery due to emergency.

For the future it is important to locate general surgery together with emergency. If necessary, one could split acute and elective surgery on the two hospital sites.

An elective surgery unit (day and short term surgery) for more specialities could be a viable solution.

Vascular surgery has on 1.3.2000 moved to Fossvogur, and is sharing a ward together with geriatrics. The speciality moved to Fossvogur due to the high ratio of emergency patients in vascular surgery.

Most important cooperation partners are intensive care unit and the operating theatres, and the speciality needs access to rehabilitation. Another important cooperation partner is cardiac surgery.

There is a very little outpatient activity; all patients are diagnosed in private practices before admission to hospital.

Urology is located in both hospital sites, with the stone lab at Hringbraut. Fossvogur has an inpatient unit, a day unit, operating rooms and urodynamic laboratory. Almost half of the patients in Fossvogur are treated with day care, and the length of stay has been reduced over the years.

At Hringbraut, however, there are no outpatients and day patients.

This may be due to the reimbursement system, in Fossvogur the doctors are paid for outpatients and day patients, but in Hringbraut they are not.

Important cooperation partners are nephrology and dialysis, general surgery, vascular surgery orthopaedics and geriatrics.

Rather few patients are emergency patients, approx. 15%. A united Urology department does not have to be located at the same hospital site as emergency.

Plastic surgery is located at Hringbraut, and perform reconstruction after cancer, traumas etc. A burn unit was established some years ago, but now closed down, and the patients moved to intensive care unit.

Plastic surgery has beds in the urology ward. The speciality has no specific demands about localisation.

Orthopaedics is located at both hospital sites, where the more acute patients (hot orthopaedics) are admitted at Fossvogur and the elective patients (cold orthopaedics) at Hringbraut.

All smaller surgery is performed in the private sector, and the patients are diagnosed in the private sector too.

The ideal solution would be one department in one building, and to separate acute and elective patients, both in wards and in operating theatres. The elective ward could be located together with geriatrics.

Important cooperation partners are geriatrics, cardiology and pulmonology, rehabilitation and plastic surgery.

Thoracic/cardiac surgery is located at Hringbraut, and the department is performing all cardiac surgery except transplantations, most child surgery and lung surgery.

The patients are diagnosed in cardiology, and there is a long waiting time for diagnosis, as well as for surgery.

Important cooperation partners are the intensive care unit and rehabilitation.

Thoracic/cardiac surgery should be located in the same building as trauma, cardiology and neurosurgery.

Neurosurgery is located at Fossvogur together with emergency. Due to head traumas proximity to paediatrics is important.

Ophthalmology is located at Hringbraut in a separate building. There is a big outpatient and day patient activity. The speciality has no specific demands for location together with other specialities.

ENT is located in Fossvogur, with a specialist in Hringbraut. Important cooperation partners are paediatrics and neurology. Also important is cooperation with emergency about face traumas.

All smaller cases are treated in the private sector, day surgery is decreasing, and the services are moved to the private sector. Only the heavy cases remain in the hospital.

5.1.6. Geriatrics

Geriatrics is located at Hringbraut, Fossvogur and Landakot.

Geriatric specialists and some bed capacity are important for the acute hospital function and for many of the specialities there.

We suggest gathering the geriatric patients in one location with one ward, and with a consultancy service in the other location.

The geriatric ward can be located in Hringbraut or Fossvogur. The services at Landakot remain unchanged.

5.1.7. Rehabilitation

Rehabilitation is today located mainly at Grensás, and some in Fossvogur. Access to rehabilitation is of increasing importance for many of the specialities, in order to discharge patients and to improve efficiency of inpatient care.

We suggest to move rehabilitation beds out of Fossvogur, and to establish the necessary bed capacity for this activity outside Hringbraut and Fossvogur.

We suggest using the facilities in Grensás and Kopavogur for rehabilitation as follows:

- Use all Grensás for inpatient rehabilitation after inpatient stay in Hringbraut and Fossvogur by
  - Moving neurology out of Grensás to either Hringbraut or Fossvogur and
  - Moving outpatient and day patient services from Grensás to Kopavogur.
- Use Kopavogur for outpatient and day patient services. (The hospice remains unchanged)

5.1.8. Psychiatry

Acute psychiatry is located mainly at Hringbraut, but also in Fossvogur and at Kleppur. Aftercare, rehabilitation and long-term care are provided at Kleppur, Arnarholti, Vífilstaðir, Gunnarsholti and several other locations within Reykjavik.

For the future the aim is to move all acute beds out of Kleppur to Hringbraut.

Psychiatric services include emergency assessments, liason work, outpatient care, daypatient care, inpatient care, rehabilitation, psychometric assessments, occupational therapy and input from social workers within the Department.

The most important co-operation partners within the Hospital include Emergency services, the various Internal Medicine Departments, Child and Adolescent services, as well as geriatric Medicine and Rehabilitation Departments of Landspitali. Outside the Hospital important agencies include General Practitioners, rehabilitation centres, social services, users associations and the Police.

Options to enhance efficiency include home-based nursing care, access to emergency day-hospital beds and home visits the day after emergency attendances. These options go hand in hand with recent reinforcement of our emergency and outpatient services in order to endeavour to reduce inpatient stay as much as possible.

5.2. Clinical functions

The hospital has organised the clinical functions into divisions like emergency, anaesthetics/intensive care/operation, clinical services, laboratory services and physiotherapy.

The present distribution of these functions at the locations at Hringbraut, Fossvogur, Vifilstadir, Grensás, Kopavogur and Landakot are shown at the table below.

Most of the functions are located at both Hringbraut and Fossvogur, and some at the other locations.

Present localisation of clinical functions

Clinical functions	Hringbraut	Fossvogur	Vifilstadir	Grensás	Kopavogur	Landakot
Emergency	Emergency Observation unit	Emergency Observation unit				
Anaesthetics **Intensive care** **Operation**	Anaesthesiology Operating rooms Intensive care sterilisation	Anaesthesiology Operating rooms Intensive care sterilisation				
Clinical services	X-ray Pathology Record rooms Pharmacy Priest	X-ray Record rooms Pharmacy Priest	X-ray Record rooms	Record rooms	Record rooms	X-ray Record rooms
Laboratory services	Blood bank Clinical Chemestry Clin. microbiology	Clinical Chemestry Clin. microbiology				
Physiotherapy	Physiotherapy Occupational therapy	Physiotherapy Occupational therapy		Physiother. Occup. ther.	Physiother. Occup. ther.	Physiother, Occup. ther.

5.2.1. Emergency

Emergency is located at both Hringbraut and Fossvogur, and the two locations share the admission responsibility. At both locations there are an observation unit for observation, diagnosis and short-term treatment of emergency patients.

Acute admission for paediatrics, obstetrics and psychiatry is taking place in the departments at Hringbraut.

Traumatology is only located at Fossvogur. However, thoracic/cardiac traumas and burn patients are admitted at Hringbraut.

How to organise the emergency function is one of the main issues for the Functional Development Plan, and as mentioned earlier there are indications for keeping Traumatology at Fossvogur, and to admit acute patients in both Hringbraut and Fossvogur.

This will be analysed in the coming planning.

5.2.2. Anaesthetics/intensive care/operation

Anaesthetics, intensive care, operation and sterilisation are located at both Hringbraut and Fossvogur as service functions for all the specialities. This situation will remain unchanged.

5.2.3. Clinical services

X-ray services are located at both Hringbraut and Fossvogur as service functions for the specialities. This situation will remain unchanged. Depending on the final distribution of the specialities it might have some consequences for the distribution of examination rooms.

Pathology is located at Hringbraut and the function should be seen in connection with the other laboratory functions.

Pharmacy is located at both hospital sites today, and it should be considered only to have one pharmacy or getting the pharmaceuticals from an external pharmacy or directly from the suppliers.

Record rooms should not be necessary in the future, as electronic medical records are almost ready, and eventually paper filing could be in any location.

5.2.4. Laboratory services

Blood bank is located at Hringbraut and laboratories for clinical chemistry and clinical microbiology are located at both Hringbraut and Fossvogur.

We suggest only having one laboratory in the future. This laboratory should be organised together with pathology, and location could be in any of the hospital sites or eventually outside the hospital.

5.2.5. Physiotherapy

Physiotherapy, including occupational therapy, is located in both Hringbraut and Fossvogur as well as in Grensás, Kopavogur and Landakot.

The tasks for this service is to support the clinical specialities with therapy in the acute phase during inpatient treatment, and thereafter therapy to support the more long-term rehabilitation after surgery, stroke, trauma etc.

Physiotherapy and occupational therapy is therefore an integrated service and should be served mainly in the wards of the acute hospital and only in fewer cases in a central therapy.

In rehabilitation departments the physiotherapy can be performed in more centralised training departments, swimming pools etc.