Copenhagen October 23rd 2012

Eu Health Property Network

European collaboration for knowledge exchange in the field of hospital planning

-local workshops with global topics

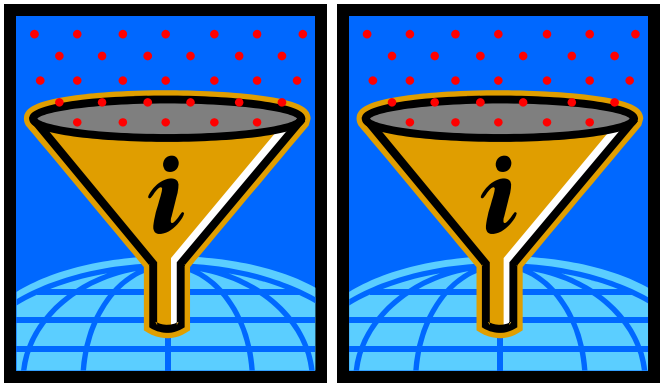
Marte Lauvsnes, research manager, SINTEF

Background – why networking and knowledge sharing?

- Good hospital environments are **important for a lot of end users**; patients, visitors, students and staff
- Hospitals buildings are **expensive**
- Knowledge and the knowledge exchange is **not structured**
- Lessons learned from new hospital projects are **occasionally disseminated**
- Results from research do not have a common **information site**
- **Limited collaboration** between academic, advisors/planners and end users
- **Limited international collaboration** and fragile networks

Goals

- Develop knowledge in the field of hospital planning
- Develop knowledge both locally and globally
- Develop strong networks
- Collaborate between users (clinical staff, patients), academics, advisors and decision makers



Information collection and shower

Who will attend workshops

International

- Hospital planners, advisors
- Academics, researchers, students
- (Decision makers)

National

- Hospital planners, advisors
- Academics, researchers, students
- Decision makers
- “End users”; staff, patients, students

Method

- Workshop (20-30 participants)
  - not master class?
  - not conference?
- Contribution from all
- Engage local researchers, planners and end users/decision makers
- Use local universities, hospital projects
- Focus on local subjects and challenges that have global and interests and impact
- Short lectures on research, new plans and projects, experiences
- Discussion groups
- Information on web page
- What about telestudio/webinar?

Focus areas

Functional areas

- Hospital bed wards; somatic, psychiatry
- Operation units; day surgery, intervention
- **A&E units**
- Intensive and high-dependency units
- Nursing homes, rehabilitation units, old people and hospital environments

Planning process

- Front end planning
- Strategies and goals
- Integrated planning models
- Health care delivery systems, clinical production and build environment

Experiences from the
international workshop in Kotka, Finland
February 29th – March 1st

Dimensioning and structuring
services for acute care in hospitals

Participants

- There were about 30 invited researchers, hospital planners and clinical staff from
- Finland (Kotka Hospital and the municipality of Kotka)
- Researchers and hospital planners from Norway (SINTEF, Technology and society and Eliassen Lambertz-Nilsen)
- Researchers from England (UCL, The Bartlett)
- Hospital planners from Sweden (LOCUM) (Illness by the Swedish participants was the reason why they had to cancel their trip to Kotka)
- Denmark (Danish regions and Vejle hospital)
- Helinä Kotilainen has been the coordinator from Finland.

Definitions

Acute care services

Hospitals

Acute& Emergency Units or Emergency Departments

*An **Emergency Department** (**ED**), also known as **Accident & Emergency** (**A&E**), **Emergency Room** (**ER**), **Emergency Ward** (**EW**), or **Casualty Department** is a medical treatment facility specialising in acute care of patients who present without prior appointment, either by their own means or by ambulance. The emergency department is usually found in a hospital or other primary care center.*

- Clinical Decision Units, Observation Units, Acute Short Stay Units

Primary health care, first level acute care

- Urgent care, Health centers, Acute short stay beds, Observation units

The agenda for the 1 ½ day workshop

- Information about the health care structure in Finland and the Kotka / Carea project
- Changes in healthcare and development in hospitals
- Plan and decision process
- Strategic planning; research, methods
- Planning methods and models for acute care services and A&E units
- Examples from recent projects
- Group discussions on methods and concepts
- Presentation of the Kotka project
  - The project/planning process, progress plan
  - Methods for planning services, capacity and area
  - Model for the future Acute and Emergency unit
- Group discussion on the Kotka project

Planning premises and factors to be aware of

Mapping existing acute care services:

- What activity is included in the acute services?
- Activity and capacity figures by diagnosis?
- Which functional units in the hospital are included in acute services?
- Patient process description, what happens after the patient comes into the A&E unit and who decides where the patient goes next, patient flows, patient/staff contact points
- Indicators like staffing resources, number of visits, lead-time, door to door, door to doc, patient flow in bed wards, adverse events/safety
- Patient and staff satisfaction
- Any barriers in the built environment and infrastructure for good service delivery

→ **Pre occupational evaluation**

New strategies, changes to fulfill future challenges and goals

A conceptual planning model to deal with A&E flow

INPUT

Includes any condition or system characteristic that contributes to the demand for ED services

Interactions among components of the health care system and community that affect ED use.

depending on

1. Demographics
2. Incidence
3. Options
4. Expectations
5. Practice

THROUGHPUT

PATIENT LENGHT OF STAY

- Triage
- Room placement
- Initial provider evaluation
- Diagnostic testing
- ED treatment

depending on

1. Cohesiveness of patient care teams
2. Physical layout
3. Staffing and competence
4. Effiency and use of diagnostic testing
6. Accessibility and quality of documentation and communications systems

OUTPUT

Factors contribute to inpatient boarding the ED

- Observation Unit
- Intensive
- Nursing Home
- Discharge
- Deaths

depending on

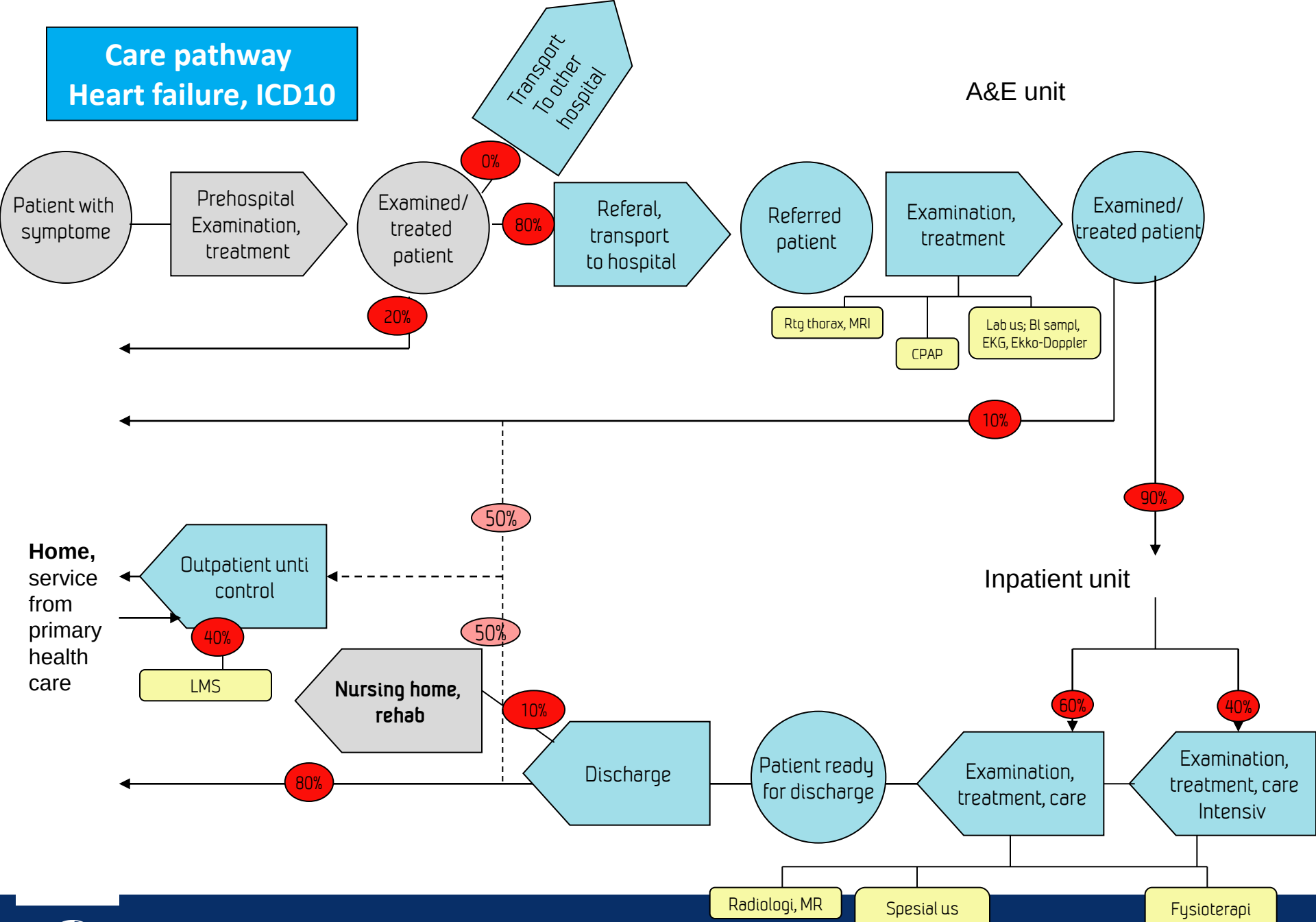
1. Bed capacity
2. Overreliance on intensive care
3. Variety of programs for retaining and expanding the nursing workforce.
4 Municipal health and care services

Asplin BR, Magid DJ, Rhodes KV, et al. A conceptual model of emergency department crowding. Ann Emerg Med 2003; 42: 173-180

Activity and capacity calculation methods

- Capacity calculation based on activity data
- Care pathways – diagnose related activity calculation
  - Data sources: ICD10, DRG's, Preliminar diagnosis
- AiA use in their guidelines the following subdivision
    - *Trauma*
    - *Chest pain*
    - *Observation*
    - *Fast track*
    - *General*
- Capacity calculation based on population adjusted to demographic and epidemiologic changes
- Simulation to adjust to variations, queuing models
- Scenario techniques

Care pathway
Heart failure, ICD10



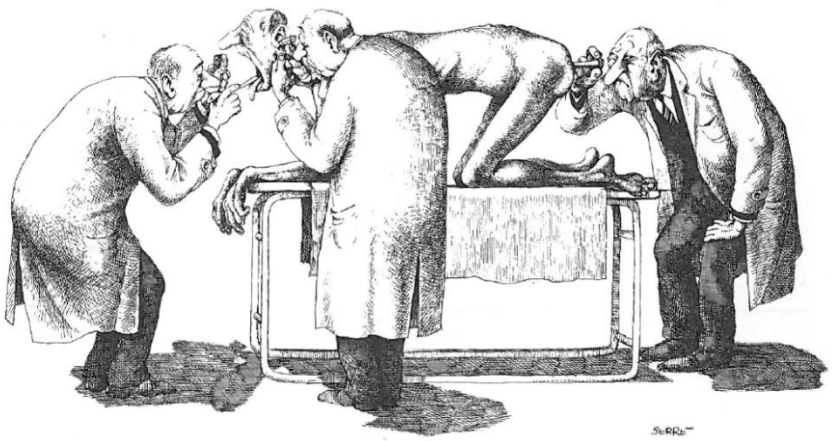
Integration between specialized and primary health care services

- Holistic approach to healthcare delivery
- Interactions among components of the health care system and community that affect A&E use
- Bringing primary care specialists into the hospital to keep patients out
- Bringing specialists from hospitals to primary health care to keep patients out
- Avoiding unnecessary admissions in hospitals. Focus to home care, preventive treatment

- Taking care of acute patients outside hospitals?
  - Which patients?
  - Cost?
  - Competence?

Care models influencing acute care facility planning

- Changes in skills, knowledge and technology in prehospital care; medical treatment in ambulances, mobile radiology
- Changes in organising staff and professions → Senior physicians in front
  - A&E as diagnostic and treatment unit
  - A&E as dispatch unit
- Observation and short stay beds
- Acute outpatient clinic
- Models to optimize patient flow
  - Triage
  - "Bypass"
  - Fast track
  - Minimum Door-to-Doc time, Door-to-Discharge time



Diagnostic and treatment available

"A hospital within the hospital"

Diagnostics

- Radiology
- Lab; Blood and urine tests
- Specialized tests; heart ultrasound

Treatment

- Special treatment rooms/labs
- Monitoring
- Isolation rooms

Specialized staff available, able to make descisions

Patient safety and security

- Reduction of time spent in A&E units
  - Reducing emergency unit waiting time
  - ED overcrowding
- Logistics for trauma and acute ill patients
- Infection risk
  - Isolation facilities in acute settings
- Medication errors
- Visual control
- Balance between openness and security barriers

Patient needs

- Environments design; Decompression zones, positive distraction
- Design in A&E units for elderly people
- Taking care of families, children
- Wayfinding
- Information/communication
- Remove waiting rooms, use waiting lung

Examples from Nordic countries

Case studies

Näkymiä Hyvinvointipuistosta

Näkymä Hyvinvointipuistoon kevyen liikenteen yhdyssillalta

Näkymä päivystävän ydinsairaalan sisäänkäyntialueelta

Näkymä ydinsairaalasta

ARKKITEHTITOIMISTO HARRIS - KJISIK ARCHITECTS VenhoevenCS lead consultants

Integration of primary and specialized care

Nordic Healthcare Group

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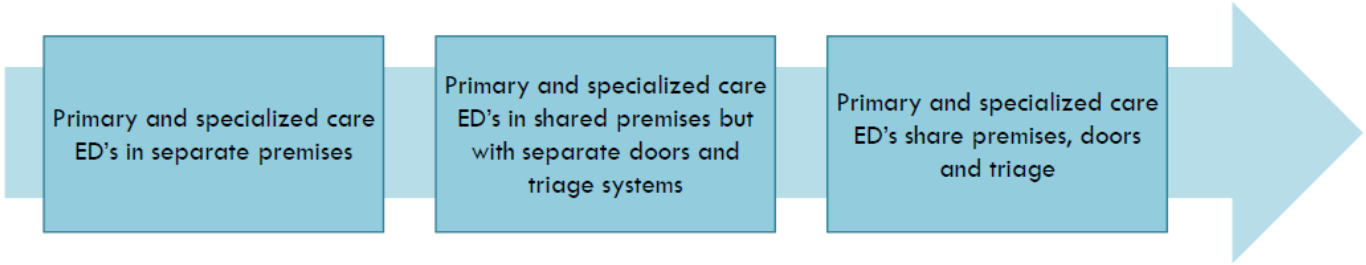
- Finnish central hospital ED's differ in level of integration between primary and specialized care



- Sharing premises means less need to drive patients from building to building by ambulance – also better opportunities for primary care MD's to consult specialists
- Good opportunities to consult means less referrals to specialized care ED, as some patients can be treated at the primary care ED after consultation and support from specialists
  - Good cooperation also shortens the total length of stay for patients referred to specialized care, as examinations can be started already before referral
- Also needless primary care visits are avoided if the triage nurse has the authority to refer an arriving patient directly to specialized care ED when necessary

→ All in all, good cooperation and integration of primary and specialized care at the ED decreases overlaps, which means both better quality and monetary savings

Four levels of conceptual planning of hospital clinical service production

Nordic Healthcare Group

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1. Hospital

Health service system level planning
- Profile of hospital

2. Medical and Functional Blocks

- Diag-nostics
- Primary Care Knowledge center
- Hot Hospital
- Special care knowledge Center
- Day hospital /surgery
- Wards
- Supporting services
- Rehabili-tation

Strategic level planning
- Role of hospital in the network

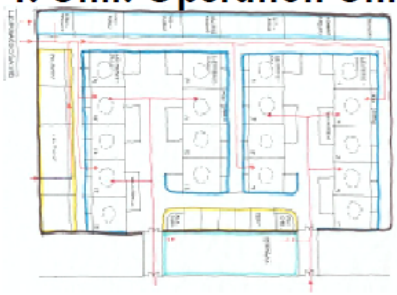
3. Block: Hot Hospital

- ICU
- CCU
- Patients in critical care
- Emergency
- Operation
- Stroke unit

Block level planning
- Scope of services
- Macro level processes
- Resources

4. Unit: Operation Unit

Rooms, spaces and work stations

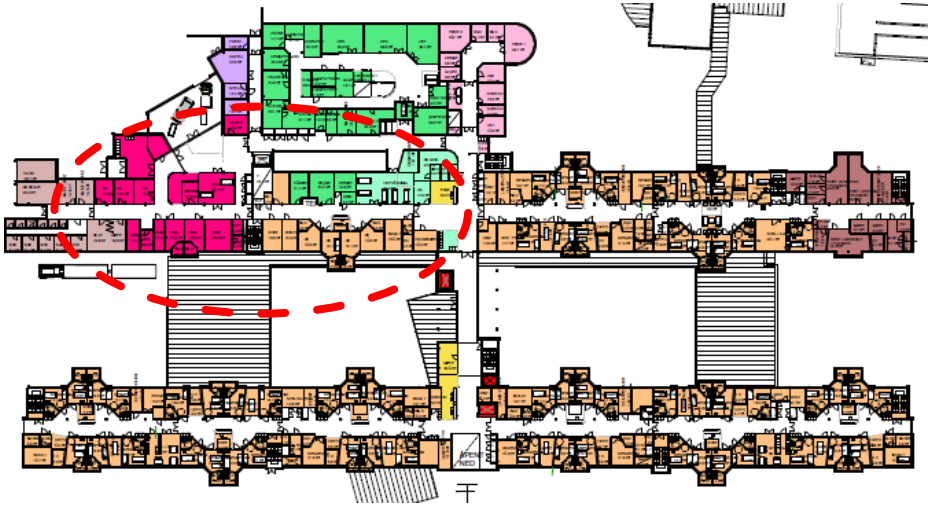


Processes
Work schedules
Logistic flows

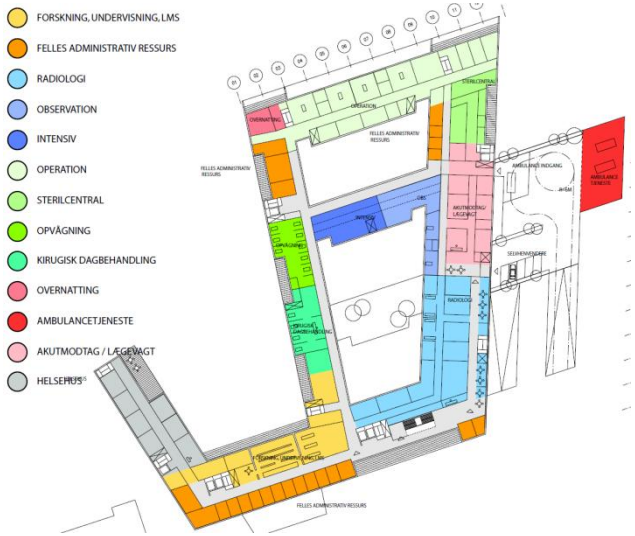
Unit level planning
- Micro level processes

Source: Antti Autio, Erkki Vauramo, PARETO project, Aalto University 2010

Norwegian district hospitals



Vesterålen hospital
Population: 30 000
Beds: 56+5 HDU+ patient hotel
Observation beds : 3+1



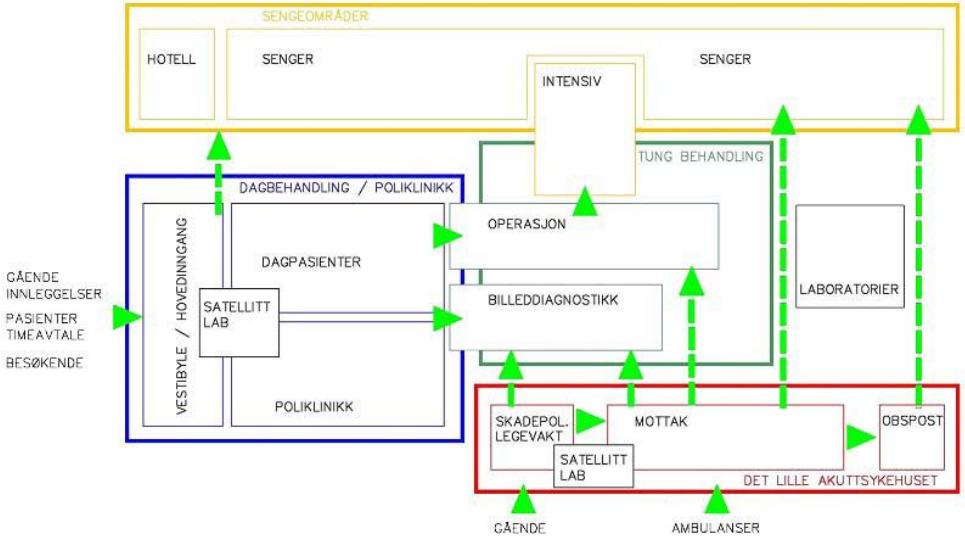
Narvik hospital
Population: 26 000
Beds: 44+5 HDU+ patient hotel
Observation beds : 3

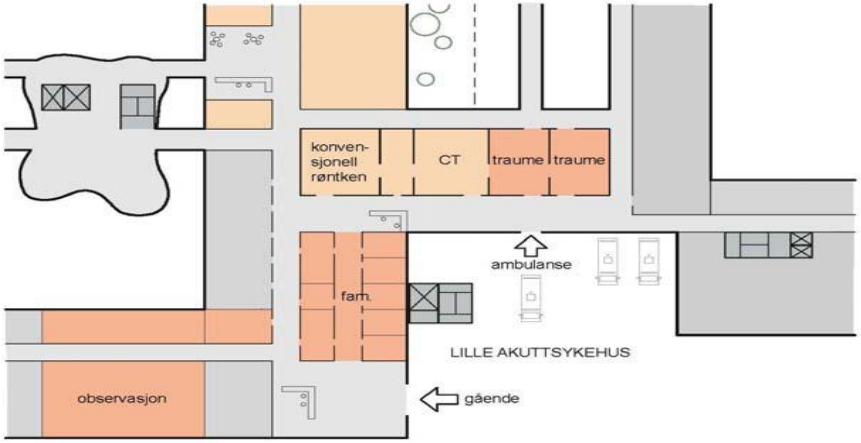
Bodø Hospital

(Nordland Hospital trust)

Population: 78 000 (local)
Beds: 233 + patient hotel
Observation beds : 11
Triage beds: 4

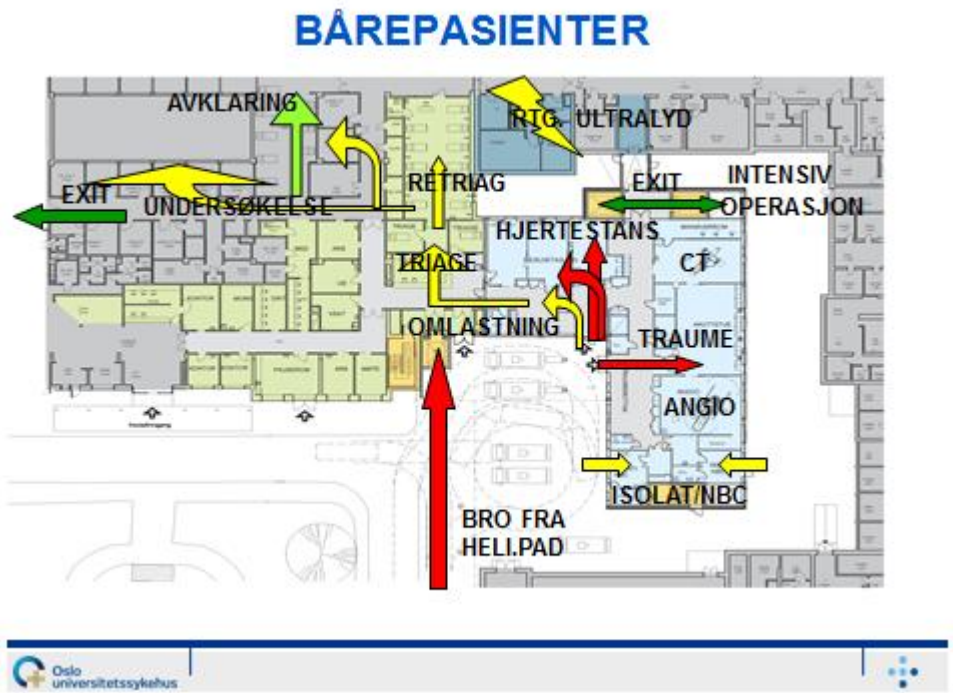
Molde Hospital





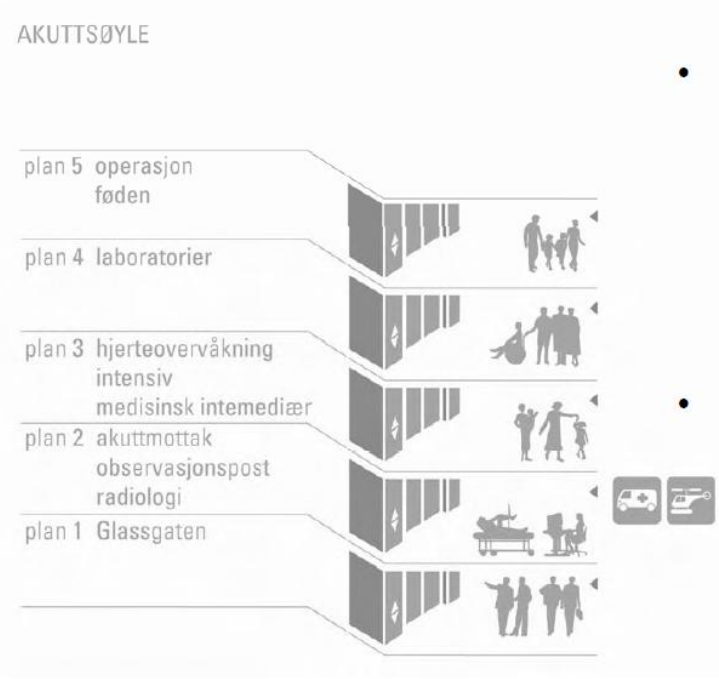
Population: 70 000 (local)
Beds: 147+patient hotel
Observation beds : 8

Ullevål Hospital (OUS)



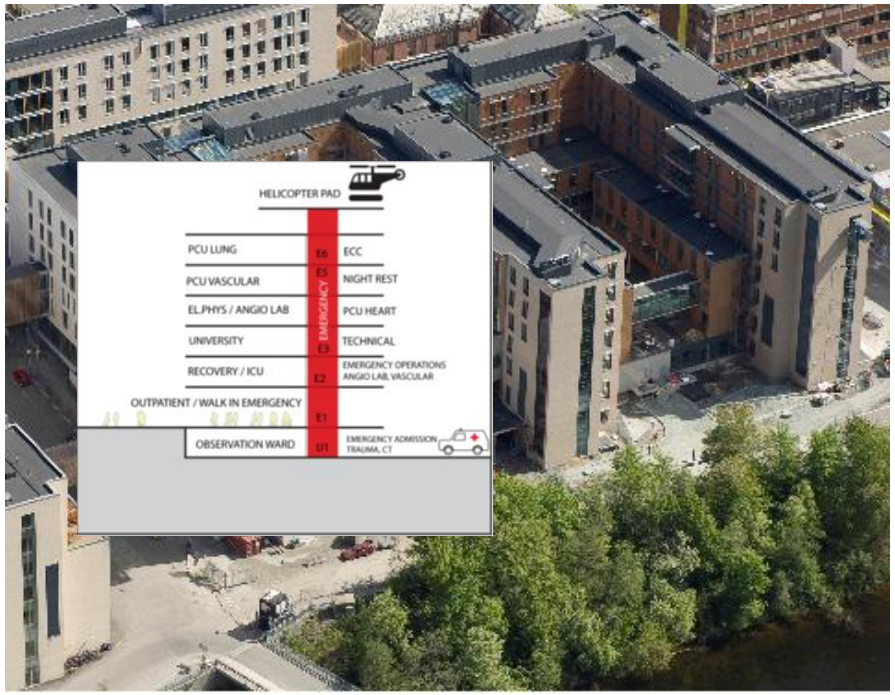
Population: 220 000 (local), 480 000 (regional)
Beds: 662 (in 2025)
Exam room:19
Triage beds: 16
Observation beds : 54 (in 2025)
Operating rooms: 6

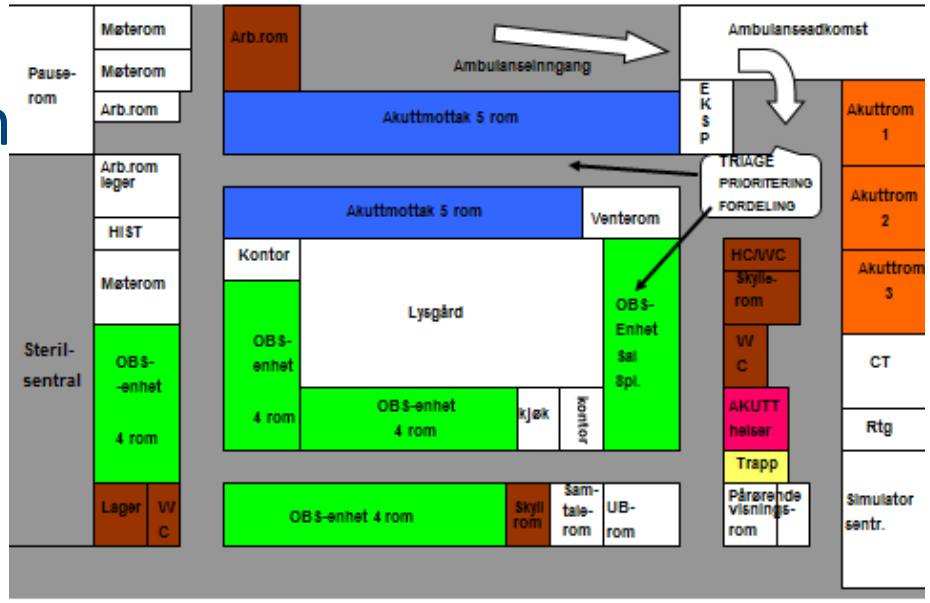
Akershus University Hospital



Population: 460 000
Beds: 565 (496 in use)
Exam room: 15
Observation beds : 22+4

St Olavs Hospital (Trondheim





Population: 230 000 (local)
Beds: 690 + patient hotel
Observation beds : 22

International workshop: Dimensioning and structuring services for acute care in hospitals

Anne Guri Grimsby, Architect, Arkitektgruppen for nytt østfoldsykehus

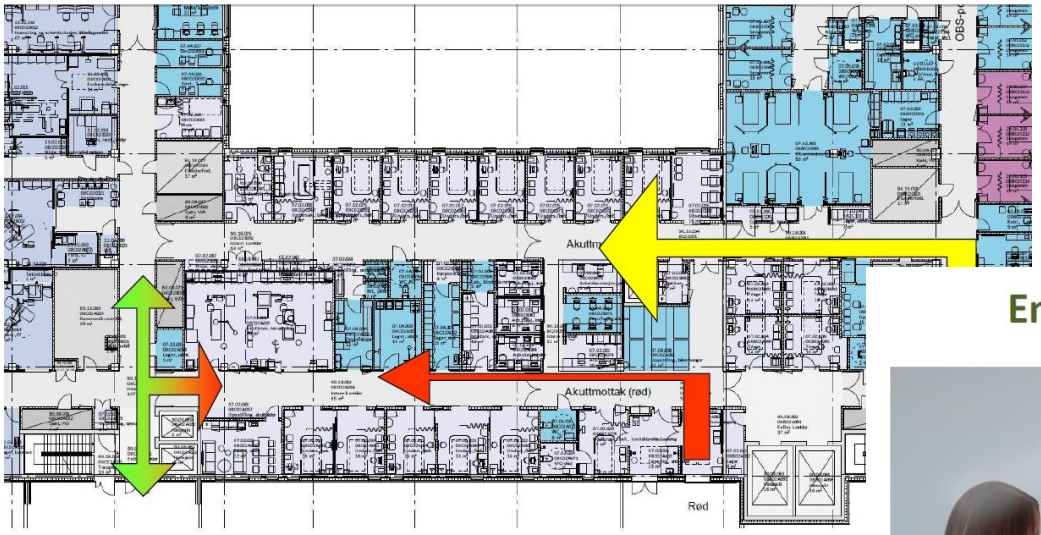
HELSE SØR-ØST COWI arkitektgruppen nytt østfoldsykehus

nytt østfoldsykehus / workshop kotka finland 29th February - 1st March 2012

HELSE SØR-ØST arkitektgruppen nytt østfoldsykehus

New Østfold Hospital (2016)

Emergency unit



Emergency unit - entrance

Population: 300 000 (local in 2020)
Beds: 351
Observation beds : 59 (+8 in Moss)
A&E admissions: 45 000

Comparision between Norwegian projects

Hospital	Population	number of inpatient stays	No. Beds	No. Oberservations beds	% observation beds vs ordinary beds
Narvik hospital	26 000	35 854	49	3	6%
Molde hospital	70 000	16 627	147	8	5 %
Bodø hospital	78 000	16 515	233	11	5 %
Ullevål hospital (OUS)	220 000	118 193	662	54	8 %
New Østfold hospital	300 000	42 356	351	59	17 %
A-hus University hospital	460 000	45 026	496	26	5 %
St. Olavs Hospital	230 000	46 271	690	22	3 %

Post occupancy evaluation, St Olavs Hospital, Trondheim

- The built structure is not very flexible for expanding capacity for the A&E unit
- Poor overview, visibility between work stations and from work stations to treatment rooms
- Changes in care delivery, procedures and work processes after moving in to the new A&E unit
  - *The national reform/strategy to keep patients out of hospitals*
  - *Triage*
  - *Change to more examinations and treatments in A&E*
  - *Treatment of Ischemic heart patients – fast track to PCI/trombolysis*
  - *Ischemic brain/stroke patients*
  - *Hip fractures*

- Need better overview over all patients in the A&E
- Depends on good patient flow in the rest of the hospital
- Examination rooms is a bottleneck

Sweden, Malmø

Lessons learned and recommendations

- Knowledge sharing was **knowledge development** for all participants
- **New connections** to the network are established
- Workshop is a really **good low cost arena** for networking and knowledge sharing
- **1 ½ day** is perfect. The group should not be more than **30**
- Workshop between different member countries gave **new perspectives** on planning methods, strategies and solutions
- **More systematic research and pre- and post occupancy evaluation is needed**
- **Benchmark data and information** is needed for all stakeholders
- Results from evaluations should be **disseminated** through the network, available on the web site
- Next workshop should focus on **acute care services for elderly people**; planning premises, services, solutions

Thank you for giving opportunity to arrange the workshop and to share the experiences with you today☺