Lessons from Europe - the Danish approach to whole-system innovation

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THE REGION OF SOUTHERN DENMARK

Smart specialisation and user involvement

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ABOUT THE REGION OF SOUTHERN DENMARK

OVERVIEW

- 1.2 million residents
- 41 politicians elected in regional council
- Health sector budget € 2.6 billion
- Employs 25,000 people
- 4 hospital units
- 800 GPs
- 22 municipalities / home care

<table>
<thead>
<tr>
<th>REGION</th>
<th>CITIZENS</th>
<th>CITIZENS / SQM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPITAL</td>
<td>1,702,388</td>
<td>665</td>
</tr>
<tr>
<td>CENTRAL</td>
<td>1,262,115</td>
<td>96</td>
</tr>
<tr>
<td>SOUTH DENMARK</td>
<td>1,200,858</td>
<td>99</td>
</tr>
<tr>
<td>ZEALAND</td>
<td>819,071</td>
<td>113</td>
</tr>
<tr>
<td>NORTH</td>
<td>579,787</td>
<td>73</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5,564,219</td>
<td>129</td>
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</table>
ABOUT THE REGION OF SOUTHERN DENMARK

THE REGION’S FOUR MAIN FOCUS AREAS

Health
- hospitals, health insurance, patient transport, etc.

Social Services
- specialised offers for citizens with physical and mental handicaps

Psychiatry
- psychiatric care at hospitals or through district psychiatry services

Regional Development
- Business development, education and culture, sustainability pollution of soil and public transports
We want to **optimize** and boost the **efficiency** of our health and social sector.

At the same time create **jobs** and **growth**.

And finally provide citizens with improved **life quality**.
Since 2010 Region of Southern Denmark has invested around **EUR 37 million** in public-private partnership projects. Total project budgets of **EUR 93 million**.
PARTNERING

SHARING KNOWLEDGE

USER NEEDS

TECHNOLOGY

ORGANIZATION
Facilitating the right conditions

- Open innovation vision
- Simple and clear framework
- Concrete Platform

Region of Southern Denmark
ODENSE – CENTRE OF HEALTH INNOVATION AND WELFARE TECHNOLOGY IN DENMARK

ODENSE

- Odense University Hospital
- The national consortia for promotion of the Danish Healthcare Solutions
- The National Board of Health and Welfare, The Danish Centre of Robotics
- The National Centre of Public and Private Innovation and
- Patient@Home, the biggest national research project
NEW HOSPITALS > NEW OPPORTUNITIES

► 9 new hospitals and hospital units are being built the next 10 years (total amount of EUR 1.2 bn.).

► *Healthcare Innovatorium* - an innovation platform across sectors, regions and countries.

► The region offers companies access to its hospitals, institutions and staff and thereby creating a unique environment for research and test and product development.

LIVING LAB DENMARK

- A platform for collaboration on innovative welfare technology solutions promoting a professional dialogue between public and private organizations that either offer or demand such solutions
- Secretary
- National network of LLDK facilitators
- Labelling scheme
- Website with
  - Toolbox
  - Project exchange
  - PPI exp:
  - PPI member database
Odense University Hospital
- A driver of innovation in Danish health care

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Managing Hospital

Director, OUH, Denmark
A National Centre for Danish Health Care

- 1 of 3 major national health care centres
- Covers approximately 1.6 million citizens
- A highly specialised hospital with functions that cover all surgical and medical areas in 50 clinical departments
- Approx. 10,000 employees; 1,400 doctors.

Budget (2012):
- Operating budget: 790 million €
- External research funds: 8.9 million €

Clinical research:
- OUH and the University of Southern Denmark are jointly responsible for 207 PhD students, 64 professorships and 829 peer reviewed publications.
- Almost 4,000 students participate in a clinical study programme at OUH every year.
The burning platform

Our reality

- Treatment options
- Chronic conditions
- Elderly Citizens
- Demands on therapy
- Health professionals
- Public financing

Time
The global development and burning platform forces us to think differently about health care and how we deliver health services to citizens!

The road to the hospital(s) of the future…..

New OUH ready in 2021
# Reality of New OUH

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of beds</td>
<td>1047</td>
<td>647</td>
</tr>
<tr>
<td>Number of bed days</td>
<td>281,575</td>
<td>272,852</td>
</tr>
<tr>
<td>Number of outpatients</td>
<td>509,132</td>
<td>655,280</td>
</tr>
<tr>
<td>Number of emergency ward visits</td>
<td>50,006</td>
<td>54,751</td>
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</tbody>
</table>

400 or 38% less beds available!

28% increase in outpatients!
What can we do to get there?
(examples)

• Use (shared) data to secure optimized processes
• Patient involvement – deliver services outside the hospital
• Move focus to prevention - learn from other sectors

– To ensure high quality health care in the future, it is essential for the health sector to join forces with industry and science to create cost-effective solutions that improve the daily operation of the hospital

– True innovation and change is born in the synergy between the three fields
Partnering for innovation

1+1+1 = 4

• Focus on the core competencies of each field:
  • Health sector: Knowledge on how to run a hospital and deliver high quality health and care services. Identification of challenges.
  • Industry: Technical and business know-how. Application of a different mindset to facilitate change.
  • Science (academic institutions): Experts in research and idea generation. Support innovation with evidence and documentation which is key in the health sector.
Innovation must always be coupled with solid evidence and documentation to ensure that the solutions developed truly bring value to the end user.
Collaboration with industry:
Video interpretation

• 2008: Cisco, OUH and an agency of interpreters start a pilot project.
• Cisco supplied technology and videoconferencing infrastructure, OUH offered access to select clinical departments and the agency offered interpreters trained in videoconference.
• A mini-HTA of the pilot provided clinical and economical documentation.
• Decision to implement in the entire region (shortly after it was agreed to implement nationally as well)
• 2-year implementation project = Daily operation by 2012
• Everyone wins: Cisco (sell infrastructure), Atea (sell equipment), Interpretation agency (more jobs), OUH (improved workflow, better service)
Combining health, industry and science: COPD Briefcase

- 2005: Dept. of Respiratory Medicine declared that they needed a better quality of treatment for the COPD patients.
- 2006: OUH and GiTS collaborate to develop a mobile solution to offer COPD patients treatment and monitoring in their own home after discharge.
- Criteria: Simple and easy to use. Work every time. Stable and high quality connection.
- The end product: A 'briefcase' with only three buttons; Power, Connect and Volume.
- Pilot project: Patients and staff reported satisfaction
- To obtain solid documentation of the service, it was included in a large European research project and a PhD (incl. Randomised Control Trial)
- The conclusions from the PhD and the overall evaluation of the service (economy, patient perspective, organization, ethics) will be published at European Telemedicine Conference 2013, in Edinburgh (October 2013)
- The service is already implemented in the daily operations at OUH for the benefit of patients and staff. See video on www.ouh.dk/copdbriefcase.
Documenting eHealth services

• A number of ongoing clinical and PhD projects create clinical evidence on innovative solutions:
  – COPD Briefcase – Treatment and monitoring in the home of COPD patients
  – Treatment and diagnosis of diabetic ulcers – Development of 3D camera
  – ePatch – Wireless monitoring of heart arrhythmia
• The clinical evidence is coupled with a comprehensive analysis the solution seen from of economic, organisational, ethic, societal and patient perspectives through the MAST model.

• Patient@Home: The largest Danish welfare-technological research and innovation initiative with a funding grant of 9,4 million €.
  – Focus on new technologies and services that contribute actively to the reduction of number and duration of admissions to hospitals.
  – Includes 20-25 PhD projects and aims to develop 40 different eHealth solutions during the project period.
  – OUH is involved in various research projects within Patient@Home.

• Health care as a discipline is based on scientific evidence!
Current innovation projects at OUH

<table>
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<tr>
<th>EU-funded</th>
<th>National</th>
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<tr>
<td>• Renewing Health</td>
<td>• ePatch</td>
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<tr>
<td>• COPD Briefcase</td>
<td>• 3D Wound Imaging</td>
</tr>
<tr>
<td>• Telemedical Ulcer Treatment</td>
<td>• Videoconference (interpretation and discharge)</td>
</tr>
<tr>
<td>• United4health</td>
<td>• GameLab4Health</td>
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<tr>
<td>• SUSTAINS</td>
<td>• Patient@home</td>
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<tr>
<td>• Applied Health</td>
<td>• Hand disinfection robot</td>
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<td>• COLLIN</td>
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<td>• Health Games</td>
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A good national and international network is important – We must benefit from the experiences of others who are facing similar challenges.
Innoevent
- Collaboration with educational institutions can also create innovative processes based on user needs in the hospital

• 700 students gather for a week to bring new ideas to life.
• Students from various fields of study – health professions (nurses, physiotherapists, etc.) to multimedia and IT, graphic design, etc.
• The hospital sets the overall theme and presents clinical and organizational challenges
• The students come up with ideas and create prototypes and mock-ups guided by expert facilitators
• On the last day the solutions are presented to a field of judges from the participating institutions
• Various ideas from Innoevent have been formed into innovation projects at OUH

Innoevent themes
• 2010: Communication with patients
• 2011: Serious games in the hospital (Gamification)
• 2012: Patient safety
• 2013: New OUH

Results
• New solutions and ideas
• New internships
• New research projects and PhDs.
• Creation of new SMEs based on new ideas
• Recruitment for the beneficiary company
• Demonstration and influence on staff
• Marketing for academic institutions and the hospital
Innovation is good – but....

– Innovation projects must fit into the overall strategy of development for the hospital
  • projects must support the long and short term goals and visions

– The key is to make the most of the core competencies of all innovation stakeholders to improve the health services provided to patients and citizens.

Thank you
Thank you

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