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ANALYSIS

Integrated care: a Danish perspective

Despite three decades of reform Denmark's health sector is still struggling to provide coordinated care for an ageing population with a high burden of chronic disease. **Andreas Rudkjøbing and colleagues** describe recent initiatives to improve continuity of care

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The Danish health system, in common with most Western health systems, is grappling with the dual challenges of strengthening public health initiatives to prevent disease and providing care to a growing number of patients with chronic disease and comorbidity. A recent review of the system suggests that it generally provides high quality services¹ and patient satisfaction with primary care and hospital services is high.² Nevertheless, despite a raft of policies aimed at integrating health services, the Danish system still suffers from a lack of coordination of care. Although Denmark's health information systems are widely admired, barriers to integration include organisational fragmentation, perverse financial incentives, and the absence of a single electronic medical record.

Danish healthcare system

Denmark, a high income country with 5.6 million inhabitants, is divided into three political and administrative levels: the state, five regions, and 98 municipalities. This division is reflected in the organisation of the health system (box 1), which is a Beveridge-type system similar to that in the United Kingdom and other Nordic countries.

The state is responsible for overall financing and regulation, and is increasingly taking responsibility for activities such as monitoring the quality of care and the distribution of specialist care among hospitals. The primary sector consists of private (self employed) general practitioners, physiotherapists, dentists, specialist doctors, pharmacies, and municipal health services, including nursing homes and home nurses. Social care is the responsibility of the municipalities and is not part of the health services.

GPs, who act as gatekeepers to specialist care, are financed by the regions through a mixture of capitation and fee for service. Most secondary and tertiary care takes place in hospitals owned and operated by the regions.

Despite the financial downturn, investment in new hospitals and upgrading old ones continues. Total healthcare expenditure, currently 11.5% of gross domestic product, has grown faster during the past 10 years than government spending in total, and faster than the average expenditure of the EU-15 countries.²

More than 30% of the adult population are estimated to have at least one chronic disease,³ and despite low inequality in terms of income distribution⁴ and free access to most health services, Denmark has seen increasing inequalities in mortality (table 1)⁵ and morbidity.³ Cancer mortality is higher than in comparable western European countries.⁷

Integrated care tops the healthcare agenda

Historically, health and social care in Denmark has been decentralised, but major health reforms introduced in 2007 have centralised the control of healthcare services in an attempt to strengthen their coordination. Centralisation was partly driven by the finding that life expectancy is low compared with that in other countries in the Organisation for Economic Cooperation and Development (table 1) and evidence of uneven access to health services across the country reflected in, for example, differences in waiting times and use of certain interventions.⁸ There was also concern about the quality of services provided by municipalities, especially the smaller ones.⁹ In addition, the distribution of tasks between the state, regions, and municipal levels was viewed as unclear, leading to uncoordinated service provision and less effective diagnosis, treatment, and rehabilitation, especially for patients with chronic diseases.

Box 1: Health service delivery in Denmark

National level—Overall regulatory, supervisory, and fiscal functions but also increasingly responsible for specific planning activities, such as where interventions are performed, monitoring quality (accreditation), and information technology

Regional level—Hospitals, psychiatric healthcare services, and contracts with private (self employed) practitioners (GPs, specialists, physiotherapists, dentists, chiropractors, and pharmacists)

Municipal level—Disease prevention, health promotion, and rehabilitation outside hospitals. Other municipal health services, including nursing homes, home nursing, health visitors, municipal dentists, and social psychiatric services

Key reforms introduced in 2007

The reforms introduced in 2007 were designed to transform a healthcare system predicated around historical needs for episodic, short term interventions for acute conditions. The 270 municipalities were merged into 98, and one of the seven explicit goals (box 2) was to improve the integration of health services.

Centralisation of specialist services and greater central government involvement in monitoring and planning are key elements of the reforms. Concurrently, many new IT systems have been set up to improve the flow of information within the health system. While these have often been rather isolated local and regional initiatives, an increasing number of national programmes have now been established.

An important element of the reforms has been the introduction of mandatory healthcare agreements. These are political and administrative agreements that provide a framework for practical cooperation between providers in the regions and municipalities and are drawn up by representatives from the region and municipality (box 3). The agreements are made at the start of the regional and municipal election cycle every four years and cover six specific areas—hospital admission and discharge processes, rehabilitation, medical devices and aids, prevention and health promotion, mental health, and follow-up on adverse events—with the option of adding others.

The healthcare agreements provide national oversight as well as feedback mechanisms¹⁰ and are seen as good tools for strengthening cooperation across sectors,¹¹ although the joint national monitoring system set up to monitor their effects will report later this year. However, since the healthcare agreements are made solely between the regional and municipal authorities and GPs are not systematically involved, it is questionable whether they can bridge the gap between public providers and private general practitioners.

Strengthening the coordinating role of GPs

Several initiatives have been implemented to strengthen GPs' position as coordinators of care. One example has been to provide them with financial incentives to coordinate the care of diabetic patients. GPs are paid an annual fee from the regions of £125 (€156; \$195) per patient to cover the various elements of disease management. GPs have to regularly assess the appropriateness of each patient's management and document consultations. Follow-up visits must be agreed between the GP and the patient, and the GP must follow up on non-attendance. The obligation to provide continuous and anticipatory care is new for Danish GPs, who have hitherto largely provided reactive care. They are also responsible for coordinating specialist services such as eye care, endocrinology, and podiatry. With respect to diabetes this also entails linking the various services offered by the municipalities, as well as offering patients self management programmes, modelled on the Stanford Chronic Care programme.¹² Another requirement to get the annual fee for diabetic care is the installation of a sentinel data capture

system. The system, which has been shown to significantly improve quality of care,¹³ collects key data from the electronic health record system, generates reports for each practice, and benchmarks the GP's performance against that of other GPs.¹⁴ If the incentive scheme proves successful it will be expanded to other chronic diseases.

Another initiative is a payment of £80 for home visits to assess elderly and fragile patients. Rather than focusing on specific diseases, the visits are intended to assess elderly people's resources and functional ability, to identify and possibly prevent the emergence of health problems, to review drug use, and to gain knowledge of their daily life so that the doctor can help ensure patients have appropriate interdisciplinary health support. Some GPs are employed as general practice consultants, who are affiliated with one or more hospital departments. The overall aim of the GP consultant is to improve cooperation between the primary and secondary health sectors by facilitating communication and breaking down barriers between the two sectors. The work of GP consultants is coordinated on a regional level by general practice coordinators, who are also GPs.

Coordination of secondary care

Denmark's high cancer mortality has made this a priority for improving coordination of care. Patient pathways have been produced for 32 cancer types that stipulate a predefined course of action from clinical suspicion, through diagnostic procedures, to treatment.¹⁵ Clinicians are required to follow clinical guidelines that are developed and kept up to date by multidisciplinary cancer groups. The policy has significantly reduced waiting times from referral to starting treatment for most cancer types—for example, lung cancer from 56 to 42 days, colorectal cancer from 36 to 29 days, and head and neck cancer from 57 to 35 days.¹⁵ Effects on health outcomes, quality of life, and patient satisfaction are still to be shown. Similar pathways have been implemented for heart disease and psychiatric disorders.¹⁶

National funds have been made available to support the testing of new local care coordination interventions and technologies by regions and municipalities. One example is a joint telemedicine project between eight municipalities and two regions that provides expert assistance to patients with pressure and diabetic ulcers by mobile phone. The home nurse communicates with experts at the hospital by videophone. They share digital images and a web based "ulcer medical record." This increases the quality of care and helps prevent hospital admissions and amputations.

Good but far from perfect health information systems

Denmark has been hailed as a leader in health information technology by the international mainstream media because of its primary care systems.^{17 18} However, a national electronic medical record accessible to all health professionals is not likely in the near future. A network of standalone systems using

Box 2: Aims of 2007 reforms

The 2005 health act described the objectives, general purposes, and instruments of the healthcare sector. The act, which was implemented in 2007, establishes the requirements of the healthcare system to ensure respect for each individual and to fulfil the need for:

- Easy and equal access to healthcare
- Treatment of high quality
- Integration of services
- Choice
- Easy access to information
- Transparent healthcare system
- Short waiting times for treatment

Box 3: Examples of Danish healthcare agreements*Agreement on hospital admission and discharges*

- How the parties will ensure that relevant information on patient treatment and care, etc is exchanged between the municipality, the GP, the hospital, and possibly other relevant players; how it will be ensured that the information is provided on time; how to ensure that relevant information is communicated to the patient and, where appropriate, to relatives and that the parties are available for further dialogue and questions from the patient
- How the parties will prevent emergencies or unplanned admissions
- How the parties will ensure timely clarification of the individual patient's needs after discharge from hospital, including coordination of discharge timing and discharge related services
- How the parties will ensure that patients can be discharged from hospital as soon as they meet certain discharge criteria
- How the parties will follow up on the agreement

Agreement on health prevention and health promotion

- Division of tasks between the regions and municipalities in relation to the patient directed disease prevention and health promotion efforts
- How the parties will ensure coherence of regional and municipal disease prevention and health promotion efforts
- How the parties will communicate about the organisation, development, and quality assurance of patient directed disease prevention and health promotion efforts
- How the parties will ensure that policies for patients with an established need for patient oriented disease prevention are organised in accordance with scientific evidence
- How the parties will ensure that chronically ill patients are in contact with the relevant actors in the region and municipality in relation to disease prevention and health promotion
- How the parties will follow up on the agreement

common standards is now believed to be the best way to share patient information across the health system.

All GPs use electronic medical records. The systems allow doctors to manage medication lists, share clinical notes, view diagnostic images and laboratory test results, and send reminders to patients. GPs are connected to specialists, pharmacies, laboratories, and hospitals through electronic clinical messaging systems. These services are connected to a national online health portal that allows patients to access waiting time information, schedule appointments with their GPs, review laboratory test results, access medication lists, and email their GPs, although availability of these functions varies between systems.

Despite all of these developments, healthcare professionals often still do not have access to all the information they need to make clinical decisions, especially in emergency care or out of hours. The process of developing exchange of information between sectors is still slow, costly, and difficult because of the many different systems combined with technical, organisational, and professional challenges.

Is Denmark on the right track to achieve integrated care?

So far, the effects of the 2007 reforms are unclear. Strong public and political support across the political party spectrum and a commitment to maintain healthcare spending should help the Danish healthcare system meet the challenge of demographic change and rising rates of chronic disease. Concern remains, however, that the reforms will not be sufficient to ensure the

continuity and quality of care that is required for patients with chronic diseases.¹⁹ The reforms have also done little to stimulate new approaches to health promotion and disease prevention because they transferred the main responsibility for these tasks from the regions to the municipalities, who did not have the necessary experience or funding.

The division of tasks and financial incentives often works against cooperation between providers. For example, financing rehabilitation is a municipal duty, but provision of services has been split between the regions and the municipalities, resulting in suboptimal and uncoordinated services. Reimbursement of hospitals is also not always linked to clinical performance and better coordination. Rather, funding on the basis of diagnosis related groups provides hospitals with financial incentives to divide outpatient visits into several contacts and to avoid telemedicine initiatives (where the patient is monitored at home by the hospital), secondary care outside hospital (outreach geriatric teams, etc), and referral of patients back to their GP for control and follow-up of chronic conditions.

The healthcare system still does not provide sufficient support to help patients with few resources navigate the complex system, and socially determined health inequalities related to quality of care are still a problem. Evaluation of the changes in Denmark will help identify the organisational, technological, and financial instruments that will improve and secure coordinated care for the whole population in other countries with complex, fragmented health systems. However, the Danish experiences show that it is possible to improve coordination of care through decentralised agreements between providers within a framework

of national legislation and monitoring. Combining these processes with relevant financial incentives and efficient information systems seems to be a way forward.

Contributors and sources: MO, AJN, AR, HOB, CH-Q, and AK recently wrote the 2012 Danish Health System Review (HiT), which served as the basis for this article. AR, MO, and AJN have extensive experience with the Danish health system. HOB is an experienced economist and has been employed by different governmental healthcare organisations. CHQ has experience of health systems in Europe through her involvement with the European Observatory on Health Systems and Policies. AK has extensive experience with international health systems and has worked on previous HiTs. AR and AK drafted and revised the paper and are guarantors. MO, HOB, AJN and C H-Q revised the draft paper. Anna Maresso suggested improvements to the language in the final draft.

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Table

Table 1 | Inequality in mortality, life expectancy, and income in selected OECD countries. Modified from Diderichsen et al[5]

	Inequality in mortality*		Life expectancy (years)	Income inequality†
	Male	Female		
Denmark	828	511	76.8	23.2
Sweden	625	381	79.7	23.4
Finland	1255	483	77.7	26.9
Norway	980	518	78.7	27.6
France	1044	375	79	28.1
UK	862	462	77.9	33.5
Italy	639	197	79.8	35.1

*"Slope index of inequality"—a measure of absolute differences in mortality per 100 000 between the highest and lowest levels of education[6]

† Gini coefficient×100 .