

Research and Theory

Does a public single payer system deliver integrated care? A national survey study among professional stakeholders in Denmark

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Abstract

Background: Integrated health care delivery is a goal of health care systems; to date there has been limited information on the integration of medical care in practice.

Purpose: To examine and compare perceptions of clinical integration and to identify associated strategic, cultural, technical and structural factors.

Design and setting: A national survey addressed to: all county administrative managers (n=15); all hospital managers (n=44); and randomized selected samples of hospital department physician managers (n=200) and general practitioners (n=700) in Denmark.

Results: Several initiatives have been implemented in Denmark to integrate care. Nevertheless, most physicians agree that only half of all patients experience well coordinated pathways. Clinical integration is a strategic priority at the managerial levels, but this is not visible at the functional levels. Financial incentives are not used to encourage coordination. The information communication technology to facilitate clinical integration is perceived to be inadequate.

Conclusion: The scope for improvement is high due to the structural composition of the system. Increased managerial stewardship, alignment of the financial incentives, and expanded use of information communication technology to link sub-organisations will be a way to move the system forward to meet its explicit goal of providing an integrated delivery of services.

Keywords

integrated health care delivery, computerized medical records system, case management, disease management, health planning, Denmark

Introduction

Integrated care is in a key position to play a role in health care reforms in many contemporary health care systems. The positive outcomes of integration, in terms of reduced duplication of services, improved access to health care and safe, high quality care supported by efficient information flow, are to an increasing extent becoming clear [1]. However, the path to achieve integration is less clear [2]. Within the developing field of integrated care, few studies have

been conducted on how national health care systems tackle the challenges of integrated care at the macro, meso and micro level, and there are still fewer studies linking this to performance regarding integration at the clinical level.

In this study we focus on the Danish health care system. A system that shares many characteristics with the health care systems found in the United Kingdom and the Nordic countries, which by and large are Beveridge-type systems. The Danish case and

Table 1. Key elements of the Danish health care system	
Coverage	Universal coverage for all residents, financed predominantly through progressive taxation.
Providers	Reliance on regional and local government for financing and delivery of health care services. Consumer choice of general practitioner, [GP] who serves also as gatekeeper to most specialised services. GPs work in private practices and are remunerated by the regions through a mix of capitation payment and fee-for-service. The average number of GPs in a practice is 1-3 GPs per unit. 98 Municipalities have the responsibility for prevention and rehabilitation and provide home health care and care for the elderly; some municipalities are piloting local health centres e.g. for patients with chronic disease. 5 Regions have the responsibility for secondary care delivered by practising specialist in private practice working under fee-for-service and hospitals with physicians working for a fixed salary. Patients may choose among hospital services anywhere in the country. If the regional authorities cannot provide care within a limited time, patients may choose to be treated in either private hospitals or hospitals abroad contracting with the regions.
User Fees	Generally low level of user fees but high user fees on a limited number of services such as dental care, medicines, chiropractors, physiotherapy, and technical aids.
Information communication technology [ICT]	98% of GPs use ICT (mainly for in-house medical record keeping, pharmacist prescriptions and receiving test results from laboratories and discharge notice from hospitals) Hospitals also use ICT, but communication with primary care providers is limited. There is no common national record system.
Population Health	Poor health habits in the population and high and unfulfilled potential to strengthen public health measures and community efforts.
Reforms	Recent reform strategies: towards high-volume centralised units with a focus on highly specialised care; increased provider competition; extended free choice for patients; increased use of activity based financing to replace global budgeting; limited but steady rise in privatization of health care services and private insurance arrangements; nationwide requirements for ICT are being developed; accreditation process of hospitals.

Source: [8–10].

efforts to achieve integrated health care delivery constitutes a large-scale natural experiment and the experiences from such an experiment can be highly useful especially for policymakers and health planners in systems with similar models of health care provision. For policymakers and health planners in general the Danish policy ideas and empirical results can serve as a learning opportunity. Coordination of care as an important health political challenge in Denmark is broadly accepted by all main stakeholders; among these are the Ministry of Health, the medical societies, and the patient associations [3–5]. A barrier to progress is that the debate on coordination problems is often based on individual case stories [3]. Few quantitative studies have examined the extent of integration of medical care and associated factors, even though such studies would allow policymakers and health system planners to focus their efforts and monitor the progress potentially associated with the efforts being made.

In a previous paper we investigated the use of health plans as a tool for strengthening coordination, quality and preventive efforts between the regional and local level of health care in Denmark [6]. The research question for this new study is to examine and compare major professional stakeholders' perceptions of clinical

integration in the Danish health care system. In addition we want to identify strategic, cultural, technical and structural factors potentially influencing the achievement of clinical integration within the health care system.

The structural and financial framework for provision of integrated health care delivery

Defining features of the Danish health care system are a) universal access and coverage, b) predominantly tax financed, c) decentralized structure, i.e. public regional and local authorities have the responsibility for the provision and delivery of health care services; this is therefore, by and large a public integrated system [7]. An important exception to this is the general practitioners who are self-employed but reimbursed for their services by the public regional authorities [8]. These structural and financial conditions at the macro level set the framework for provision of integrated health care delivery to the recipients of the Danish health care services (Table 1).

Coordination of care has long been a partial objective of large-scale reforms gradually changing the structur-

al and/or financial conditions for the provision of health care services in Denmark [8]. Since the early 1990s reforms have largely been a consolidation of decentralization principles coupled with increased patient choice and use of activity based reimbursement [7]. This has, in practice, resulted in more 'free choice' than for instance in the United Kingdom's internal market arrangements [7]. The 'contradiction' is that the decentralized units, e.g. regions, usually are thought of as integrated systems (financing and provision within a delimited geographical area serving the population of the catchments area) [7]. One of the effects of the 'free choice' is therefore, a need for a higher degree of coordination of services among the decentralized authorities responsible for the provision of health care services. This is because it allows patients to use services both within and outside the traditional catchment areas [7]. Such developments were part of the background for the implementation of a major structural reform in January 2007 [11]. The structural reform mainly resulted in larger regional and local administrative entities, which are expected to provide more specialized and integrated solutions whilst maintaining local democratic accountability [11]. Within the new structure the main responsibility at the regional level is health services and to a lesser extent some environmental and regional developments tasks. Most other tasks have been moved to the state or the municipalities. The new municipalities assume full responsibility for prevention, health promotion and rehabilitation outside hospitals in addition to the traditional municipal health care services such as home care, nursing homes and child dental care. The structural reform was accompanied by a financial reform using municipal co-financing of health care provided by the regions, which was also meant as an incentive for coordinated care [11].

Care coordination strategies in Denmark

The delivery of coordinated health services is an explicit aim in the first paragraph of the Danish Health Act. At the functional level of care the Danish health care system involves a gatekeeper function, where the general practitioners are expected to guide patients through the system as it relates to access to secondary care and to ensure follow-up after hospitalization. The gatekeeper system is a key element for care coordination in the Danish health care system. However, recent debate has focused to a great extent on the need for improved coordination of care. The general public and health care providers are concerned about compromised quality of care, and there has been marked focus on poor linkages among the

components of the cancer care system. Emphasis is on building a system that patients and their relatives can access and navigate more easily without system-induced waiting time. Cost containments are also seen as an important reason for improving care coordination. The elderly, the chronically ill and ethnic groups are seen as particularly vulnerable groups. To optimize care for these groups it is crucial that cooperation between the general practitioners, independent specialists, hospitals and municipal health services is efficient and stable [6].

Table 2 presents an overview of identified methods for coordination of care applied in the Danish Health Care System related to disease management, care/case management and care transition management. If identified, evaluation results in relation to the applied methods are also presented. The methods for coordination of care have been exploratory and mostly local initiatives that are not necessarily replicated at the national level. Innovation as such remains a core characteristic of coordinated care in Denmark. This could most likely be explained by the decentralized nature of the health care provision, which gives rise to numerous natural experiments. Other initiatives on care coordination have been macro level planning e.g. administrative health plans, which, however, have been shown to have limited impact on the functional levels of care [6].

Theoretical section on achievement of clinical integration

To provide a theoretical framework for the study we built on the work by Shortell et al. [17, 18]. Within the field of integrated care Shortell et al. pointed, in particular, to the importance of clinical integration, defined as: *the extent to which patient care services are coordinated across people, functions, activities and sites over time so as to maximize the value of services delivered to patients* [18].

The stages of evolution towards achieving clinical integration in a health care system have been described archetypal as progressing in four stages [17]. The first stage is found in the *traditional* health system where delivery of care for a given condition is organized around individual operating units such as GPs or a specific hospital department. Care delivery is formalized within separate units by the use of protocols and pathways. At the second *transitional* stage, protocols and pathways are still bound to separate institutions but care is coordinated across clusters of operating units typically within a given stage of illness. In the third *advanced* stage, care coordina-

Table 2. Methods for coordination of care and evaluation results in Denmark	
Disease management	Chronic disease self-management programmes based on the Stanford model have been piloted and have been recommended for nationwide implementation. There is focus on patients with: diabetes type II, COPD, and other major chronic diseases [12]. Disease-specific clinical guidelines have been developed or are being developed for most major diseases. Non-adherence by doctors does however not incur formal penalties [12]. Private entrepreneurs are beginning to offer health programmes educating patients with a chronic condition in disease-specific self-management [13].
Results of evaluations	An evaluation concluded that the diabetes patients are satisfied with the piloted self-managements programmes, but more than half the patients would like a more structured follow-up on the programme. Observations of changes in effect measures e.g. HbA1c, cholesterol or blood pressure were not a part of the evaluation [14].
Care/Case management	Care/Case management initiatives have been recommended by the National Board of Health [12] Private entrepreneurs have developed patient guidance arrangements to make the care process as efficient as possible [13].
Results of evaluations	No formal evaluations have been identified
Care transition management	Gate keeping system (GPs expected to guide patients through the system as it relates to access to secondary care and to ensure follow-up after hospitalization) [9]. Nationwide general practitioner consultant arrangement [coordinating the primary/secondary care inter-phase] [15]. Some hospitals have deployed multidisciplinary Geriatric teams to achieve coherent treatment and follow-up, and give patients the opportunity to be treated in their own homes [16]. Obligatory written health agreements to coordinate the efforts of the regional and municipal level regarding hospital discharge procedures, social service provision for people with mental disorders, and preventive and rehabilitation services [6].
Results of evaluations	The practice consultant arrangement has been evaluated and the results show that the arrangements contributed positively to improved communication and breaching of barriers hindering communication [15]. In some municipalities, the use of geriatric teams has led to increased take up of home-care, day centre and other services, as the teams have identified patient needs that have previously escaped notice [16]. The health agreements are an extension of the previously used health plans, which have been used for more than a decade. The health plans have not ambiguously fulfilled their aim seen from the perspective of the regional and local authorities [6].

tion involves all sites within a given episode of illness, and the use of protocols and pathways is based on clinical service lines instead of being linked to institutions. In the final *breakthrough* stage, care is organized around processes and capabilities to serve multiple needs of populations and community groups. Focuses are on preventing disease and maintaining health, and improving the health of the populations and recipients across the continuum of care and working with others to do this [17].

Shortell et al. identified the following important barriers for progressing through these stages and achieving clinical integration; a) lack of specific strategy and an implementation plan, b) lack or misalignment of internal incentives, c) lack of cooperative working relationships with physicians, d) dispersed geography, e) institutional autonomy of hospitals, f) employee fears of job loss and physician fear of autonomy loss, g) inadequate information systems and lack of standardization [17].

The key factors in achieving clinical integration can be divided into four dimensions; 1) a strategic dimension, 2) a structural dimension, 3) a technical dimension

and 4) a cultural dimension [17]. The strategic dimension emphasizes that clinical integration must focus on strategically important issues facing the system, and not on peripheral activities. Clinical integration must thus be seen as a core strategic priority of the system. The structural dimension refers to the overall organizational structure of the system to support clinical integration efforts. This includes the use of committees, councils, task forces, work groups, service line management, and related arrangements for implementing and diffusing clinical integration efforts throughout the system. The technical dimension refers to the extent to which people have the necessary training and skills to achieve the clinical integration objectives. It also includes the organizations' information technology capabilities. Finally, the cultural dimension refers to the underlying beliefs, values, norms, and behaviour of the system, which either supports or inhibits clinical integration work. Table 3 shows the necessity of having all four dimensions in place to achieve clinical integration with a lasting organisation-wide impact [17]. Table 3 also serves as the theoretical framework for analysis of the empirical data presented in this study.

Table 3. Four dimensional framework for achieving clinical integration^a

Strategy	Culture	Technology	Structure	Results
0	1	1	1	No significant results regarding anything of real importance
1	0	1	1	Small temporary effects; no lasting impact
1	1	0	1	Frustration and false starts
1	1	1	0	Inability to capture the learning and spread it throughout the organisation
1	1	1	1	Lasting organisation-wide impact

^a0=absent; 1=fully present. Source: adapted from Shortell et al. [17]

Methods

To measure strategic, structural, technical and cultural factors of importance to ensure clinical integration in the Danish health system, four different surveys were constructed and addressed to selected Major Professional Stakeholders (MaPS) in the Danish health care system. We find this multi-respondent approach—which we name the MaPS approach—beneficial when investigating clinical integration, because this research area by definition includes collaboration processes between multiple settings within a complex health care system.

The construction of the questionnaire items was based on a literature review and the items were included as part of a large-scale survey. The survey was conducted in 2005–2006 at the baseline of the Danish structural reform. The survey included items on 1) Administration and management, 2) Financial circumstances, 3) Coordination of health care services 4) Preventive services and 5) Rehabilitative services. The purpose of the large-scale survey was to provide empirical data on the Danish health care services at the baseline for the structural reform (See www.sundhedsreform.ku.dk for an in-depth description).

A specific questionnaire was constructed for each respondent group:

- 1) Administrative managers from all counties plus Copenhagen, Frederiksberg and the Regional Municipality of Bornholm with county related functions (n = 15) (administrative regional level).
- 2) All hospital managers (n=44) (secondary care sector, functional level).
- 3) A random sample of hospital department physician managers (n=200), representing approx. 25% of the total number of relevant hospital departments (secondary care sector, functional level).
- 4) A random sample of general practitioners (n=700) corresponding to approx. 20% of all

general practitioners nationwide (primary care sector, functional level).

The items were constructed to capture relevant sub-dimensions of strategic, cultural, technical, and structural importance to achieve clinical integration. Items that specifically measured perceived achievement of clinical integration were also developed. Items on achievement of clinical integration were restricted to the three relevant groups of respondents working either at a hospital or in general practice.

The wording of the questionnaire items in the four separate questionnaires was finally decided after a two-step testing procedure. The first step was a peer review process among health service researchers; the second step was a pilot study among representatives from each respondent group. This was done to improve face and content validity.

The administrative managers were identified through the Danish County Council Association representing the Danish counties. The hospital managers were identified through each hospital website if applicable and the information was confirmed by telephone when necessary. All hospital departments in Denmark were identified in order to make a random sample. To identify relevant departments we used the “hospital department classification” available from the National Board of Health. Psychiatric departments and institutions not directly placed at a hospital were excluded as were hospital departments in Greenland and on the Faeroe Islands, which are part of the list from the National Board of Health since these territories are autonomous provinces of Denmark. Departments with a supporting function, such as departments of Radiotherapy, Anaesthesia, Clinical Microbiology, Clinical Biochemistry, Clinical Pharmacology, Clinical Neurophysiology, Departments of Service and Technology and research departments, were also excluded. The random sample of the hospital department managers was selected by computing a randomization routine using statistical software. The names and addresses of all hospital department managers were available

from the National Board of Health, and because the list was not fully updated, the information was confirmed by telephone. Names and addresses of the random sample of general practitioners were obtained from the General Practitioners' Organisation (PLO) register. The randomization procedure was done directly by the PLO.

The postal survey was designed to allow the respondent to maintain anonymity, and two postal reminders were sent to increase the respondent rate. Under Danish law, an ethical review was not required for the study.

Analysis of quantitative data

Data were double keyed-in using EPIDATA. SAS version 9.1 was used to analyse the data. The overall survey response rate for administrative managers was 80.0% (n=12), for hospital managers 61.4% (n=27), for hospital department physician managers 70.3% (n=136), and for general practitioners 63.1% (n=442). Respondents with missing data on the relevant items for this paper were excluded. To test for non-response bias we tested whether the survey groups were representative for their group. The distribution of certain characteristics such as gender and practice type was known for general practitioners on a national level. That allowed us to compare the distribution of characteristics with the data reported by responders to the general practitioner survey. We used a binominal test of proportions. The responders were representative regarding gender on a 5% significance level. Regarding type of practice (solo/group or partnership practice) there was a significant higher number of partnership practices among the responders (69.5%) compared to the national distribution (63%).

For the administrative managers and hospital managers we compared responders to non-responders, but could only include information on gender. We used Fisher's exact test. The non-responders didn't differ from the responders on a 5% significance level. For the hospital department physician managers we confirmed that all counties were represented among the responders.

To present the large dataset we dichotomized the data from the Likert scales mainly used. Response categories "to a high degree" and "to some degree" were recoded as a "yes" and "to a lesser degree" or "not at all" were recoded as a "no". For a very limited number of items the response category "don't know" was available; such a response was regarded as missing information and consequently removed from the analysis.

Results

The hospital department physician managers are in close contact with patients being transferred across sector boundaries to receive care. When asked how often a patient who requires care across sector boundaries receives well coordinated care, more than half (52%) of the hospital department physician managers reported that half or less than half of the patients experience well coordinated care. Less than 2% of physician managers stated that patients always/or almost always experience well coordinated pathways. Factors of importance to explain these findings are presented according to strategic, structural, technical and cultural dimensions (Tables 4–6). Table 7 presents perceived achievement of clinical integration by major stakeholders at the primary/secondary care interphase.

Table 4 shows that most professional stakeholders at the three management levels (region; hospital; and hospital department) give high priority to coordination of care and collaboration. However, there is a clear trend when moving down in the organisational hierarchy where a lower priority is demonstrated. The use of strategies and vision to coordinate care is used to a high degree by most hospital department physician managers, but mainly within their own department and less in coordinating care with other hospital departments or GPs.

Regarding the cultural dimension, GPs are in general satisfied with the collaboration with hospital physicians regarding individual patients. The survey showed that 81% of the GPs always/or almost always, or often are satisfied; 19% of GPs are satisfied with the collaboration only half the time or less than half the time. When asked about inhibiting factors for collaboration, cultural issues such as lack of understanding of GPs' work and lack of prioritization of collaboration from the hospital physicians are inhibiting factors and are perceived as such by 71% of the GPs (Table 4). At the hospital management level 64% state that they encourage collaboration and coordination between hospital departments and GPs; however, financial incentives are not used to encourage the collaboration and coordination. Most hospital managers (77%) state that the health professional staff shares objectives in their daily work. Most of the physician managers of the hospital departments experience that they have the necessary support from the hospital managers (85%) and from their departmental co-workers (97%) to carry out their work satisfactorily.

In Table 5 results related to the technical dimension are presented, focusing on information technology

Table 4. Results related to the strategic and cultural dimension influencing achievement of clinical integration		
Strategic dimension		
Item	Yes n (%)	No n (%)
Administrative Managers (Regional Administrative Level) N=12		
Does the county authority prioritize coordinated patient pathways?	12 (100)	0 (0)
Is this prioritization visible to hospital managers?	12 (100)	0 (0)
Is this prioritization visible to health professionals at county hospitals?	9 (82)	2 (18)
Is this prioritization visible to General Practitioners in the county?	9 (75)	3 (25)
Hospital Managers (Secondary Care Administrative Level) N=27		
Does the hospital management prioritize collaboration between hospital departments and the health system in general?	25 (100)	0 (0)
Is this prioritization visible to hospital department managers?	18 (72)	7 (18)
Is this prioritization visible to health professionals at the hospital?	12 (48)	13 (52)
Hospital Department Physician Managers (Secondary Care Functional Level) N=136		
Does the department management coordinate activities within the department by using strategies and visions?	110 (85)	19 (15)
Does the department management coordinate activities with other departments at the hospital by using strategies and visions?	69 (54)	60 (46)
Does the department management coordinate activities with other departments at other hospitals by using strategies and visions?	40 (31)	88 (69)
Does the department management coordinate activities with general practitioners by using strategies and visions?	29 (23)	96 (77)
Cultural dimension		
Hospital Managers (Secondary Care Administrative Level) N=27		
Does the hospital management encourage collaboration and coordination between hospital departments and GPs?	16 (64)	9 (36)
Does the hospital management use financial incentives to encourage collaboration and coordination between hospital departments and GPs?	0 (0)	24 (100)
Do you experience that the health professional staff across hospital departments shares objectives in their daily work?	20 (77)	6 (23)
Hospital Department Physician Managers (Secondary Care Functional Level) N=136		
Do you experience that you have the necessary support from the hospital management to carry out your work satisfactorily?	110 (85)	19 (15)
Do you experience that you have the necessary support from the co-workers at your department to carry out your work satisfactorily?	127 (97)	4 (3)
General Practitioners (Primary Care Functional Level) N=442		
Is lack of understanding of a GP's work an inhibiting factor when collaborating with hospital physicians regarding individual patients?	307 (71)	124 (29)
Is lack of prioritization of collaboration an inhibiting factor when collaborating with hospital physicians regarding individual patients?	307 (71)	125 (29)

N = total number of respondents in the given survey group; n = number of responses in the given response category. N ≠ n due to missing data.

capabilities and use; 73% of regional administrative managers find that IT systems are used inadequately to strengthen the conditions for coordinated care pathways. This is confirmed at the secondary care functional level; 73% of hospital managers state that their hospital does not use a shared electronic patient record (EPR) across internal departments. Regarding the use of EPR across hospitals within the regional county—this number is even higher at 81%. Among hospital managers, 44% do not use IT based data exchange in any form to coordinate activities within departments. Only 28% use IT based data exchange to coordinate activities with other hospitals, and 32% use IT based data exchange to coordinate activities with GPs. When asked whether an EPR was used to

coordinate activities with other departments at the hospital; with other departments at other hospitals in the county; with other departments across counties; or with GPs, 56%, 67%, 94% and 82% answered “no”, respectively. At the hospital department level IT based data exchange was most widely used to coordinate activities within the department and less used to coordinate activities with other departments at the hospital (36%), and other departments at other hospitals (19%), or with GPs (12%).

Table 6 presents results related to the structural dimension influencing achievement of clinical integration. This includes the use of health planning committees, coordinating persons or units, laws and

Table 5. Results related to the Technical dimension influencing achievement of clinical integration			
Technical dimension			
Item	Adequate use n (%)	Inadequate use n (%)	
Administrative Managers (Regional Administrative Level) N=12			
To what extent does the county use IT systems to strengthen the conditions for coordinated patient pathways?	3 (27)	8 (73)	
Hospital Managers (Secondary Care Administrative Level) N=27			
Item	Yes n (%)	No n (%)	
Does the hospital use a shared electronic patient record across internal departments?	7 (27)	19 (73)	
Does the hospital use a shared electronic patient record across county hospitals?	5 (19)	16 (81)	
Does the hospital management coordinate activities across departments within hospital by IT based data exchange?	14 (56)	11 (44)	
Does the hospital management coordinate activities with other hospitals by IT based data exchange?	7 (28)	18 (72)	
Does the hospital management coordinate activities with GPs by IT based data exchange?	8 (32)	17 (68)	
Hospital Department Physician Managers (Secondary Care Functional Level) N=136			
Does the departmental management coordinate activities within the department by IT based data exchange?	57 (45)	70 (55)	
Does the departmental management coordinate activities with other departments within the hospital by IT based data exchange?	46 (36)	82 (64)	
Does the departmental management coordinate activities with departments at other hospitals by IT based data exchange?	24 (19)	104 (81)	
Does the departmental management coordinate activities with GPs by IT based data exchange?	15 (12)	109 (88)	
Item	Yes n (%)	Partial n (%)	No n (%)
Is a shared electronic patient record used between internal hospital departments?	34 (26)	24 (18)	73 (56)
Is a shared electronic patient record used between hospital departments across county hospitals?	15 (12)	28 (21)	88 (67)
Is a shared electronic patient record used between hospital departments across counties?	1 (1)	6 (5)	124 (94)
Is a shared electronic patient record used between departments & GPs?	6 (5)	17 (13)	108 (82)

N = total number of respondents in the given survey group; n = number of responses in the given response category. N ≠ n due to missing data.

regulations and work groups responsible for reference programmes and descriptions of optimal patient pathways. Almost two-thirds of the regional administrative managers express that administrative health plans are used to an adequate extent to strengthen the conditions for coordination. Two-thirds state that coordinating persons or units are used to an adequate extent. Approximately three-quarters of administrative managers find laws and regulations as well as reference programmes and patient pathways to be used to an inadequate extent. At the secondary care functional level, 80% of hospital managers state that coordinating units or persons are used to coordinate activities across hospital departments; 37% use coordinating units or persons to coordinate activities with other hospitals and 64% use coordinating units or persons to coordinate activities with GPs. The hospital department physician managers also use coordinating units or persons; 78% of all department managers use these to coordinate activities within the department,

and 52% to coordinate activities with other departments at the hospital. Fewer use coordinating units or persons to coordinate activities with other departments at other hospitals (16%) or with GPs (21%).

Table 7 presents perceived achievement of clinical integration by major stakeholders at the primary/secondary care inter-phase. Only those respondents working at a hospital or in general practice were asked regarding this issue. At the gatekeeper level the GPs are divided when asked whether patient pathways in general are appropriately coordinated within the health care system. Half of the GPs do not consider patient pathways in general to be appropriately coordinated. At the secondary care level both the hospital managers and the hospital department physician managers experience a high degree of coordination within the hospital. However, within both groups almost half do not consider clinical facilities and services in general to be appropriately coordinated.

Table 6. Results related to the Structural dimension influencing achievement of clinical integration		
Structural dimension		
Item	Adequate use n (%)	Inadequate use n (%)
Administrative Managers (Regional Administrative Level) N=12		
To what extent does the county use health plans to strengthen the conditions for coordinated patient pathways?	7 (64)	3 (36)
To what extent does the county use coordinating units/persons to strengthen the conditions for coordinated patient pathways?	8 (67)	4 (33)
To what extent does the county use laws and regulations to strengthen the conditions for coordinated patient pathways?	3 (27)	8 (73)
To what extent does the county use reference programmes/descriptions of optimal patient pathways to strengthen the conditions for coordinated patient pathways?	3 (25)	9 (75)
Hospital Managers (Secondary Care Administrative Level) N=27		
Does the hospital management use coordinating units/persons to coordinated activities across the hospital's own departments?	20 (80)	5 (20)
Does the hospital management use coordinating units/persons to coordinated activities across hospitals?	9 (37)	15 (63)
Does the hospital management use coordinating units/persons to coordinated activities between the hospital and GPs?	16 (64)	9 (36)
Hospital Department Physician Managers (Secondary Care Functional Level) N=136		
Does the department management use coordinating units/persons to coordinated activities within the department?	101 (78)	28 (22)
Does the department management use coordinating units/persons to coordinated activities with other departments at the hospital?	52 (40)	78 (60)
Does the department management use coordinating units/persons to coordinated activities with other departments at other hospitals?	21 (16)	107 (84)
Does the department management use coordinating units/persons to coordinated activities between the hospital and GPs?	27 (21)	99 (79)

N = total number of respondents in the given survey group; n = number of responses in the given response category. N ≠ n due to missing data.

Discussion

We aimed to examine major professional stakeholders' perceptions of clinical integration using the Danish health care system as a case. Among the stakeholders working at the physician-patient interaction level,

about half of all responding general practitioners and hospital department physician managers find that patient pathways are not in general appropriately coordinated. It is, however, promising that the coordination within units—such as between clinicians within a hospital setting—is perceived to be appropriately

Table 7. Results related to perceived achievement of clinical integration		
Item	Yes n (%)	No n (%)
Hospital Managers (Secondary Care Administrative Level) N=27		
Are clinical activities and services appropriately coordinated within the hospital?	24 (92)	2 (8)
Are clinical activities and services appropriately coordinated within the health care system in general?	14 (54)	12 (46)
Hospital Department Physician Managers (Secondary Care Functional Level) N=136		
Are clinical facilities and services appropriately coordinated within the hospital departments?	102 (80)	25 (20)
Are clinical facilities and services appropriately coordinated within the health care system in general?	69 (53)	61 (47)
General Practitioners (Primary Care Functional Level) N=442		
Are patient pathways in general appropriately coordinated within the health care system?	213 (50)	217 (50)

N = total number of respondents in the given survey group; n = number of responses in the given response category. N ≠ n due to missing data.

coordinated by most respondents including both health professionals and managers.

A secondary research question was to identify strategic, cultural, technical and structural factors potentially influencing the achievement of clinical integration within the health care system. By using the four-dimensional theoretical framework for achieving clinical integration we can now begin to understand which factors currently facilitate or inhibit clinical integration in the Danish health care system. **First**, since we have shown that clinical integration is not visible as a core strategic priority at all levels of the system, it is only to be expected that efforts within the area will not have a significant impact. This can also explain why the inadequate achievement of clinical integration is still a theme after having been a policy issue for more than three decades in Denmark. There is no doubt that the many small-scale bottom-up interventions, such as the *General practitioner consultant arrangement*, has contributed positively to improving communication and breaching barriers hindering communications. But it is also evident that such interventions have not changed more fundamental conditions fragmenting the system. Examples of these are geographical dispersion issues, and perverse incentives for managers related to the general financing and accreditation systems rewarding unit managers for the performance achieved within units at the price of the performance achieved across the system [8]. Such perverse incentives make collaboration and coordination counter-productive seen through the eyes of management. This might also explain why only 64% of hospital department physician managers encourage their staff to collaborate across sector boundaries, and why none uses financial incentives to encourage such collaboration. Given these results it is somewhat surprising that GPs are highly satisfied with the collaboration with hospital physicians regarding individual patients, even though they also find lack of prioritization among hospital physicians a key inhibiting factor for continued collaboration. We therefore find that the strategic and cultural factors are not fully incorporated to support achievement of clinical integration. **Secondly** the identified perceived inadequate access to a comprehensive, functioning ICT system is an inhibiting technical factor for the achievement of clinical integration across a system that is as physically dispersed as the Danish system, where GPs, Practising Specialist, hospitals and pharmacies are seldom located together. Without the presence of a functioning ICT system, coordination will be an endeavour of frustration and false starts. It is therefore encouraging that a national strategy has been established for development of an accessible, comprehensive, and compatible ICT system; however, it may take several years

to develop and implement. **Finally**, our results show that the overall organisational structure of the system to support clinical integration efforts is not used to an adequate extent. This includes the use of committees, councils, task forces, work groups, service line management, and related arrangements for implementing and diffusing clinical integration efforts throughout the system by the use of standards and clinical guidelines, especially across the primary/secondary care inter-phase.

Using Shortell's description of evolutionary stages towards achievement of clinical integration, our findings place the Danish health care systems at the second stage (the transitional stage) in the model, where protocols and pathways are still bound to separate institutions but care is coordinated across clusters of operating units, typically within a given stage of illness.

Strengths and weaknesses of the study

When investigating integrated health care delivery we consider it to be a strength of the study that a broad range of major professional stakeholders were involved in the study. Since we constructed the survey on the basis of a literature review, we chose to focus on issues that are comparable to other health systems. We were aware that the number of items in the questionnaire would have to be restricted to obtain a reasonable response rate. Postal surveys tend to have low response rates, especially among physicians [19–23]. A response rate of 61.4–80.0% is in line with or even higher than comparable surveys [24], although this means that the possible impact of selection bias must be considered. We conducted non response analysis using the limited information that we had available. The responders were comparable to the non-responders and we consider our samples representative on a national level, since we used either large samples or invited all stakeholders within the group to participate. The high response rate of the administrative managers and the hospital department physician managers also implies data representative for the group of stakeholders at the national level. Our main concern is therefore the response rate of 61.4% from the group of hospital managers and the identified overrepresentation of partnership practices among the respondents in the group of general practitioners. For both groups we consider that the most likely result of potential bias would be an underestimation of the true coordination problems, due to a strategic wish of the stakeholders to present them in a positive light and since general practitioners working in a partnership practice in general can be expected to be a good collaborative partner.

Research implications

This study is the first and only identified study in Denmark to systematically collect major stakeholders' perceptions on achievement of clinical integration and associated factors. Several case and qualitative studies has confirmed that coordination of care and information exchange across sectorial boundaries are challenging [25–27]. However, the quantitative design of this study makes it possible to generalize the challenge of coordination to a national level. Our findings are comparable with the few studies that have examined the overall achievement of clinical integration across a health care system setting where most have found little evidence of widespread clinical integration [28–30]. These previous studies were mainly conducted during the 1990s, when the information communication technology (ICT) was less developed than it is today. It would therefore be interesting to repeat such studies in a setting where the ICT systems have been developed to an extent that facilitates clinical integration and compare these findings to those of the present study. When possible, future research should use follow-up designs to investigate the impact of change within the four factors influencing the achievement of clinical integration.

Organisational implications

Since coordination of care is an explicit aim of the Danish health care law and has been a policy focus area for more than three decades, the findings of this paper are discouraging. However, the findings can help to assist policymakers, health planners and managers—in Denmark and in countries facing similar issues—to find the future direction to achieve a higher level of clinical integration. The theoretical framework emphasizes that managers must strive to enlighten the health professionals that coordination is a core strategic priority. This calls for strong leadership that can change the cultural beliefs, values, norms, and behaviours within the systems that inhibit collaboration across sectors. A key element in such a cultural transition could be the use of financial incentives. It is of utmost importance that financial incentives are aligned with other specific managerial demands in order to encourage health care professionals to focus more on cross-system quality improvements and not only on internal quality improvements. The findings of this study also stress that the build up of a comprehensive ICT system is needed and that the already ongoing work with implementation of clinical guidelines and reference programmes should be continued. A key point is that policymakers, health planners and managers should not aim to eradicate boundaries

within health care systems. Such boundaries are often necessary, inevitable and desired to achieve the benefit of specialization. Health care systems that are organised to harvest the benefit of specialization, should invest the resources needed for coordination when there is an overall vision of a connected delivery of services. The policy and organizational tactics should therefore be directed not at eliminating boundaries but at ensuring that they function well to benefit the recipients of care.

Conclusion

Seen from the perspective of major stakeholders at the professional level, the formally integrated health care delivery system in Denmark does not deliver fully integrated services. However, the scope for improvement in clinical integration is high, due to the inherent structural composition of the system and the one payer system approach. The Major Professional Stakeholder (MaPS) approach suggests the need for a) increased managerial stewardship making it clear to all health professionals that coordination of care is a core strategic priority, b) alignment of the financial incentives, and c) expanded use of information technology to link sub-organisations. This will be a way to move the system forward to its explicit goal of providing an integrated delivery of services, which could ultimately benefit the recipients of the Danish health care services.

Reviewers

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Short autobiographical notes on the authors:
Martin Strandberg-Larsen: Research on health systems organization & financing and integrated care.
Allan Krasnik: Research on health care reforms and issues of equity in the delivery of health care.

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