



Innovating care for people with multiple chronic conditions in Europe

Clinic for Multimorbidity and Polypharmacy, Denmark

Anneli Hujala, Verena Struckmann, Helena Taskinen, Ewout van Ginneken

Currently, an estimated 50 million people in the European Union live with multiple chronic diseases (multimorbidity) and this number is expected to increase further in the near future. As multimorbidity deeply impacts on people's quality of life – not only physically, but also mentally and socially – there is a growing demand for multidisciplinary care that is tailored to the specific health and social needs of these people. Integrated care programmes have the potential adequately to respond to the comprehensive needs of people with multimorbidity by taking a holistic approach while making efficient use of resources. Such programmes are characterised by providing patient-centred, proactive and coordinated multidisciplinary care, using new technologies to support patients' self-management and improve collaboration between care providers.

In order to inform policymakers, managers and professionals working in health and social care as well as patients' and informal carers' representatives throughout Europe about promising initiatives providing integrated care for people with multimorbidity, a series of case reports describing these initiatives was written as part of the ICARE4EU project (see Colophon). This case report describes an innovative approach to providing integrated care for people with multimorbidity in Denmark.



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Summary of the Clinic for Multimorbidity and Polypharmacy (CMP)

- The CMP (established in 2012) is part of the Diagnostic Centre of the Silkeborg Regional Hospital, situated in the Central Denmark Region, in the city of Silkeborg.
- The CMP organises comprehensive integrated care services to patients with multiple diseases, using a holistic approach to patient care.
- Their guiding aim is to support GPs (General Practitioners) with the care of multimorbid patients.
- The multidisciplinary clinic offers a same-day service, where multimorbid, polypharmacy patients receive a comprehensive assessment of their disease status, including a review of their medication plan and follow-up recommendations.
- A multidisciplinary team, consisting of a medical doctor, nurse, pharmacist, physiotherapist, occupational therapist and relevant specialists, including a psychiatrist, is involved in the one-day assessment of the patient.
- A multidisciplinary conference with all involved health care professionals jointly provides a treatment plan for the patient's future care.
- According to internal evaluations, the programme has saved costs for the health system while the treatment quality and patient satisfaction have increased.

1. Care for people with multimorbidity in Denmark

In 2014, 18.2% of the Danish population (5.6 million in 2014) were aged 65 years and older, and 4.2% were 80 years and older (1). Of the population aged 16 to 64 years, an estimated 25.4% had at least one (self-reported) long-standing illness or health problem in 2013 (1). Based on the occurrence of 14 self-reported chronic conditions, it has been estimated that approximately 42% of Danish population aged 50 years and older suffer from multimorbidity (2). Information regarding the Danish healthcare system can be found in Appendix 1.

2. Introduction to the programme

History and founders

The CMP is one of the clinics of the Diagnostic Centre in the Silkeborg Regional Hospital in Denmark. The Silkeborg Regional Hospital was appointed a Centre of Excellence in 2007. Since then it has been focusing in particular on developing cross-disciplinary and cross-sectional patient pathways.

Silkeborg's Diagnostic Centre was established in 2011 and it was the first diagnostic centre in the Nordic countries. The idea of founding the Centre with the aim to "challenge the habitual way of thinking" was that of the Regional Council with Bent Hansen as the Chairman of Central Denmark Region. In 2013 the Diagnostic Centre was given the status of University Research Clinic for Innovative Patient Pathways. Currently the Centre consists of several clinics offering alternative patient pathways (see Box 1). These clinics and pathways aim to offer an early and/or fast diagnose to patients, based on multidisciplinary orientation. The overall aim is to change the care pathways from in-patient care towards offering outpatient care, i.e. treatment without hospitalization to provide more efficient and time saving ways to arrange care.

Box 1 Patient pathway innovations

Similar to other European countries, the GP has a gatekeeping function, which is known to be beneficial for coordinating care. The patient pathway of a multimorbid patient is often very fragmented and different health care providers have to be consulting leading to unnecessary interventions. As the project manager interviewed stated: "*The patient is sent from doctor to doctor... and often the pathways take a long time.*" The level of interaction is generally very low among specialists within one hospital and particularly between specialists and GP's. A GP often receives feedback from specialists after the patient returns to the GP's practice.

Alongside the CMP the Diagnostic Centre of Silkeborg Regional Hospital develops different ways to innovate patient pathways. These aim to better coordinate care for patients and achieve a more effective use of the hospital's resources. Examples of innovative patient pathways developed at the

Diagnostic Centre are shortly described below.

- ‘A hospital hotline for GPs’: In order to simplify the referral procedure GPs can (24/7) call the specially established hospital ‘hotline’, if they are struggling with a patient diagnosis or in need of advice.
- Same-Day-Diagnosis (SDU) for patients with cardiac disease: A special cooperation between the cardiologist and radiologist departments facilitates a quick diagnosis and an accelerated patient pathway.
- “Cancer occulta”, a cross-professional clinic for early cancer diagnostic: Generally the patient pathway from a GP’s referral to the final diagnosis takes 22 days. At the cross professional clinic it is arranged in about two days.
- Enhanced responsibilities for the radiologist: The radiologist has received the competence to refer a patient directly to another specialist or clinic, without referring him back to his/her GP first. With this direct referral system, patients pathways were reduced from 29 days to two days (3).
- A nurse-led Atrial Fibrillation Clinic: Delegating tasks from a doctor to a nurse as a leader of a clinic does not only mean using resources more efficiently; often patients prefer to see a nurse instead of a doctor.
- A novel pathway for pulmonary patients: At the Diagnostic Centre pulmonary patients have the option to contact the hospital directly via a telephone number. Without a referral from a GP an appointment with the hospital can be made (the GP is informed afterwards).

The CMP was established in 2012 and is Denmark’s first and only outpatient clinic for patients with multiple chronic conditions and polypharmacy. The original idea for this kind of clinic came from a GP from Canada who gave a presentation in Denmark some years ago. The idea was jointly developed by a group of people from the hospital, complemented with a local GP and a research group from the University of Århus. The multidisciplinary group at the Silkeborg Regional Hospital implemented the idea.

Target group

The clinic offers comprehensive multidisciplinary diagnostic services to patients suffering from at least two (diagnosed) chronic diseases (including psychiatric illnesses). Generally GPs refer patients to the CMP, if they use at least five different drugs (which usually is the case with patients with at least two diseases). An average patient has six diagnoses, takes about 12 regular medicines, is 67 years old and lives at home.

Aims and key features

The overall aim of the clinic is to offer a holistic overview of patients with complex problems in order to give support to general practitioner responsible for the 'usual' care of these patients. The clinic provides a multidisciplinary view of the patient's medical status and a full medicine review. The identification of polypharmacy and potential side effects is an integral part of the service.

Generally the patient visits the clinic twice. During the first visit several tests are completed, but sometimes these are already performed at another clinic closer to the patient's home. During the main visit a comprehensive one-day assessment of the patient's disease status and medication is carried out by a multidisciplinary team. Thereupon a treatment plan is created, which is sent to the patient's GP, who is in most cases responsible for the continuity of care. The clinic links the GPs with specialists in a novel way. *"It is a clinic to help the patients whose burden of diseases is getting so much that GPs are not sure where to start"* (Project manager). The head consultant/chief physician of the Diagnostic Centre of the Silkeborg Regional Hospital stressed that the clinic aims to support GPs treating multimorbid patients: *"The clinic gives to GPs an easy access to hospital specialists."*

3. Integration and management

Integrative care for patients with complex needs

The CMP creates an innovative patient pathway for people with multiple diseases (see Box 2). It integrates different care professionals during and after a patient's visit. The team consists of relevant specialists, including a medical doctor, a pathway coordinator (a nurse or a secretary), a pharmacist, relevant specialists (up to 9 different medical specialities of the hospital), a physiotherapist and an occupational therapist.

The pathway starts with the referral of a **primary care GP**, includes the patient's visit at the clinic, and continues in primary care after the patient returns back to her/his GP. The GP has the primary responsibility for the patient's care and is in continuous contact with the patient. The clinic is only a one-time – though extremely important – step in the patients' pathway. It serves as the link between the different sectors, as it integrates primary care provided by GPs with the specialized care provided at the hospital. With regard to multimorbid patients this collaboration is of particular importance.

Box 2 Patient's pathway at the CMP

Starting point:

- GP sends a referral to the clinic. The referral is accepted (or rejected depending on the criteria of the clinic) by the clinic's medical doctor (MD).

Before the main visit:

- Evaluation of the patients' record by a specialist MD: an extensive desk research regarding the patient's medical history including all prior medical records
- Scheduling the patient's appointments at the clinic by a pathway coordinator (tests, meetings etc.)
- The patient's medical tests (one day visit), if not already conducted at a clinic closer to the patient's home

During the main visit:

- The pathway coordinator meets and interviews the patient (with a questionnaire) (1 h)
- The pharmacist interviews the patient about her/his medical history and conducts a full medicines review (1 h)
- The physiotherapist and occupational therapist review the patient's daily activities and limitations (in collaboration) (1 h)
- The MD's consultation with the patient (1–1,5 h)
- A multidisciplinary conference to exchange all information regarding the patient (20 min)
- After the conference the MD has a consultation with the patient

Afterwards:

- GP receives a follow up care plan summarized by the MD. This is forwarded using an electronic record system

The Medical doctor (MD) plays a central role in the patient pathway within the clinic. Two specialised doctors, a rheumatologist and a gerontologist first check whether the patient fits to the clinic's criteria after a GP's referral. Based on this evaluation, an admission decision is made. In the next step the MD searches all available patient files in order to collect all information about the patient prior to meeting the patient. This work can be very time consuming depending on the patient's medical history. The MD can access files of most hospitals and other care providers in the region. In some cases the MD asks the pathway coordinators for the information from e.g. hospitals of other regions. Patient's consent is needed only in some cases (private practitioners) and even in these cases an oral consent is enough. According to Danish regulation, the patient has to deny if s/he doesn't want the information to be shared among the care providers. The MD writes a chronological summary of all patient information, including diagnoses, former surgeries, medical tests etc., addressing also previous changes in medication. The MD decides the relevant tests and discusses them with the pathway coordinator, who coordinates the process. The aim is to conduct all the tests within one day at the clinic.

The pathway coordinator is responsible for contacting the patient in advance and scheduling the programme at the clinic. During the day visit the pathway coordinator guides, assists the patient and is the first to interview the patient during the main visit. The patient completes an initial questionnaire; if needed support is provided by the pathway coordinator.

The next professional the patient meets is **the pharmacist**, an integral part of the multidisciplinary team of the clinic, who together with the patient reviews his or her medication use (see Box 5). This thorough review focuses on identifying potential side effects and is an important element in the patient's pathway at the clinic. Lastly, the pharmacist informs the MD about the findings.

The next step is a consultation with **a physical therapist and an occupational therapist**. Before meeting the patient, they receive all information available about the patient from the MD. The two therapists work jointly to examine the patient. They usually combine a physical examination based on the ICF criteria and a patient interview regarding his/her activities of daily living (ADL). The patient is empowered to stress the most important issues in her/his daily activities. The patient-centred approach should provide practical and concrete advice to the patient.

After this the **MD** has a consultation with the patient in which all relevant medical questions are addressed and information gathered so far is explained and discussed.

A multidisciplinary conference is arranged during lunch time to enable the participation of all involved health care providers, including the MD, pathway coordinator, pharmacist, occupational therapist and physiotherapist, relevant specialists (radiologist, cardiologist, pulmonologist, rheumatologist, psychiatrist; altogether 9 different medical specialists are available at the Silkeborg Regional Hospital). The patient does not attend the conference. The MD presents a short summary of the patient, and the medication and future treatment options are discussed together. After the conference a summary of the suggestions concerning the patient's care is saved in the electronic patient record. Also the GP will have access to this information.

A videoconference has been tested that should enable GP participation and joint decision-making.

Box 3 GP's point of view

As in other European health care systems, the GP has a central role in the health care system in Denmark. The GP acts as gatekeeper to the system, meets the patient regularly and usually has a personal relationship. The interviewed GP had been part of the team initiating the clinic. She described the need for a change as follows: *"People are getting older and older, they have more diseases and they take more and more medication. In Denmark, as in all over Europe, there are several clinics for single diseases, and patients with multimorbidity visit them and then come back to GP's. Although the hospital doctors are very skilled, they focus on their 'part' of the patient. There was a need for somebody to take care of the whole patient."*

The CMP supports the GP's work and decision making. The GP receives a medication review and comprehensive feedback about a patient provided by several different health care professionals. During the multidisciplinary conference the specialists have to reach consensus on a patient's care. According to the GP, patients who have visited the clinic are satisfied, because they feel they are really taken care of and avoid visiting several specialists.

In the Danish healthcare system GPs are family doctors which function in a way as 'case managers' of patients, thereby creating a link between care professionals and patients. The Clinic of Multimorbidity and Polypharmacy supports this integrative role.

Managing integration and innovations

Collaboration exceeding conventional boundaries and mutual knowledge sharing between disciplines and professions requires a novel orientation and a change in attitude from care professionals. Innovation management is a special feature of the Diagnostic Centre of the Silkeborg Regional Hospital. Plastic organic groups (PO-groups) are one example of how innovations can be managed (Box 4).

Box 4 **Managing innovation: The example of PO Groups (4, 5)**

Interdisciplinary development work may be difficult in modern hospitals with strong traditions for specialist-oriented work arrangements and resistance to change. In addition, leaders often tend to downplay the role of practical clinical workers in development work.

PO Groups (Plastic Organic Groups) is a method for developing fast and stepwise improvements in daily clinical work. In particular, the PO groups are focusing on redesigning patient pathways, which is one of the key goals in the Diagnostic Centre of the Silkeborg Regional Hospital. The name 'plastic organic group' refers to the procedure: both the participants and the topic change and evolve during the process. The PO group method has been developed in the Diagnostic Centre and it has been successfully applied to several patient pathways. The radiology department has been actively involved in the development of the method and has acquired a central role in the multidisciplinary collaboration.

A PO group consists of an interdisciplinary, voluntary group of front line staff members. The group meets weekly for a certain period in order to make substantial changes in a specific patient pathway. Every health care professional involved in the pathway is allowed to join the group on a voluntary basis. The way of working is based on equality between both participants and disciplines. Each participant contributes with one's own professional competences. Through the front-line staff the experiences of patients are mediated into the development work.

To facilitate an easy participation, the meeting always takes place at the same time and in the same room without a agenda and lasts only 15 minutes. The method is iterative combining planning, testing and modifying initiatives. The focus is on fast stepwise changes with a long-range goal with potentially changing endpoints.

The PO group method challenges the hierarchical management orientation. The manager is a facilitator, showing to have a strong belief in the competences of the staff members and giving them freedom to act. Further, the PO group challenges traditional professional roles. The method makes it possible for clinical staff to be directly engaged in the change process. Thus it also addresses the possible reluctance of staff to challenge routines and over time potentially minimises the opposition to changes in daily practice.

4. Patient-centredness

A holistic view towards patient care

Patient-centredness at the CMP takes different forms in different parts of the patient's pathway (see Box 5), it already starts with a GP's decision to refer the patient to the clinic. Instead of a fragmented care pathway as in usual care, the patient receives a one day consultation conducted by a multidisciplinary team. This approach is time saving for the patient as the clinic is the central place for all examinations required from different health care professionals. The pharmacist explained that (...) *"People prefer to have one GP; they do not want to switch between specialists and clinics all the*

time. The clinic is helpful in this respect: after a one-day consultation the patients can return to their GP”.

By jointly reviewing the patient’s entire medical history, the MD considers the patient’s physical condition but also hears the patient’s individual needs. *“It is not my task to investigate and tell the patients that they are suffering from this and this disease. I can concentrate on what their expectations are, what they want us to address, what is the reason for coming here...It is different because they have different diseases and many problems at once. I ask them: ...What is your main goal in coming here? A lot of time is used for explanations ‘why do you take medication for this’...to help them to understand why they are taking their medicine and for what diseases.”*

Paying attention to polypharmacy of the patient is a crucial part of a holistic view of the patient (see Box 4). The holistic focus also applies to the pharmacist who should pay attention to how people ‘feel’ about their medicine. *“Some people are quite happy to have 20 different drugs, while others rather have nothing. I try to find out their personal perception of their medicine use”* (Pharmacist).

Understanding the challenges of a patient with multimorbidity

The special needs of patients with multimorbidity are acknowledged at the clinic. Patients are not obliged to fill in questionnaires in advance, as it is considered too challenging for multimorbid, often elderly patients. During their visit the pathway coordinator takes care of the patient. *“It is a long visit (from 8.30 to 14 or 15 in the afternoon) and these are patients who are fragile and could need more attention. They need to feel comfortable and well looked after”* (Care pathway coordinators).

Self-management and a personal health care plan are not addressed as in e.g. on the Chronic Care Model (6). The approach to patient-centredness at the clinic is based on the fact that self-management in the context of multimorbidity means mainly just how to cope in daily life. A personal health care plan with definite personal goals and shared commitment may not fit well with this ideology. Usually the patient is not receiving any additional instructions to be taken home. This is because the clinic does not want to confuse the patient any further after the physically exhausting day and increase the burden for the patient with extra instructions. If an informal carer of the patient is present, the care professionals may give her/him advice concerning the patient’s care if this is deemed necessary.

Box 5 Tackling and solving patients' polypharmacy problems

Polypharmacy, overuse and misuse of drugs, different side effects and other medicine-related problems are common for people with multimorbidity. The drugs are prescribed by several different physicians and with respect to different chronic diseases. The patients visiting the CMP on average take 12 (3–26) different regular medicines (7). *“Sometimes they have up to five diseases and they take one or two tablets for each disease, and then something for the side effects... Sometimes they consume 25–30 tablets before breakfast – and then cannot eat any breakfast...”*(Pathway coordinators).

The pharmacist carries out a full detailed medicine review for the patient at the clinic. For the pharmacist's consultation, the patient is requested to bring along his/her medicine and alternative treatments such as vitamins, herbal and natural medicines etc. During the consultation, all drugs are reviewed with the patient in detail. Often the patients do not remember the name of the drug or the reason for taking it. The pharmacist provides a detailed explanation of all medicines and their potential side effects. *“It is important to talk to patients and find out what the patient wants...I really can't see how you can do the medicine review without the patient being there”* (Pharmacist).

The pharmacists also have access to patient records, which enables them to receive information about e.g. a patient's blood pressure, kidney function etc. Moreover, they can access the Joint Medical Card to see whether the patient has bought the prescribed medicine. The pharmacist then updates the patient record and presents the results to the clinic's medical doctor, highlighting potential medicine related problems and also participates in the joint conference if required. In most cases, medicine consumption is reduced after a patient's visit at the clinic while side-effects are mitigated as well.

A follow-up conducted during the period 2012–2013, shows a high acceptance rate regarding the clinical pharmacist's suggestions (7).

5. The use of eHealth technology

The Clinic of Multimorbidity and Polypharmacy uses existing eHealth tools to support the work of professionals. The regional Electronic Patient Journal (patient records system) is used to access regional information sources and in particular to search information about a patient's medical history. The clinic has access to other patient records, but they all use different IT-suppliers, which makes it more difficult to exchange patient records among the four regions. Although a national eJournal exists, it may be difficult to utilize this data due to the use of different recording systems at hospitals.

The regional Electronic Patient Journal includes different sections with different information (notes, medication, blood tests, X-rays, blood pressure). The options for health care providers to access the system differ. For example, the pharmacists in the clinic can access the information on blood tests

etc. while doing medication reviews. GPs only have access to their own patients' information. A new system, which is currently being implemented, is the so-called Joined Medicine Card. It should eventually allow sharing of patients' medication information electronically between GPs and hospitals. Pharmacies have access to all electronic prescriptions (which have been used widely in Denmark since 2013).

The patient information gathered at the clinic is transferred to the GP through the regional electronic patient record system.

Within the clinic an electronic work schedule, accessible for all staff members, is used to inform the different specialists needed to participate in the multidisciplinary conference. More recently, a videoconference system has been tested during the multidisciplinary team conference, which should enable the participation of GPs.

6. Financing of the programme

Sources of funding

To support the implementation of the clinic, the department received a start-up funding from the regional government in 2012. In order to fulfil their special tasks (development of new patient pathways) about 1 million DKK (a year) of the total amount (7 million DKK) of the Silkeborg Regional Hospital is used to fund the CMP. In this sum, the pharmacist, other doctors and therapists were not included, although they spend about 40% of their full time employment at the clinic. Since 2012 the primary source of funding for the multimorbidity clinic is the statutory health financing. The multimorbidity clinic receives a global prospective budget from the Central Denmark Region on an annual basis.

Payment system

The hospital is paid per patient visit, regardless of how many physicians have been involved in the care process. On average 5 to 8 different health care providers (different specialists, nurses, pharmacist, occupational and physiotherapist) are involved in the examination of one patient during the one day visit at the CMP. Normally, the patient is visiting each specialist and health care professional separately, tests are conducted during different days and they receive remuneration for each single test. However, the multimorbidity clinic only receives one fee for all conducted tests per day, and thus generates less revenue. In general the new patient pathways are implemented to improve patient outcomes and not to achieve savings. Yet to compensate less revenue, productivity is increased in other departments/parts of the clinic.

Physicians, specialists and other involved health professionals do not receive any additional reimbursements for their time invested at the CMP. All interventions and activities offered to the patients during their day at the multimorbidity clinic are free of charge.

7. Conclusions and observations

Innovative aspects

The CMP is Denmark's first outpatient clinic. It has an innovative and unique approach specifically targeted to people with multiple chronic diseases that enables the integration of primary and specialized care. The clinic provides an efficient and time saving care pathway resulting in a more effective use of resources and more sensibly coordinated care for the patients. In particular, the clinic gives valuable support to GPs and enables collaboration of GPs with several specialists.

Collaboration

The multidisciplinary way of working at the clinic enables close collaboration and effective knowledge sharing between diverse health care professionals. The multidisciplinary conference is a functional tool enabling collaboration of diverse professionals at a practical level.

A patient – centred approach is realized through a multidisciplinary and holistic approach towards patient care. Patients receive integrated health care services and undergo a thorough assessment of their polypharmacy. Patients' abilities and needs are taken into account and shared goal setting agreements are applied for instance during the examination by the physio- and occupational therapists. Results of a first patient survey, which was conducted in a written format, showed that patient satisfaction was high.

Challenges

Integration of health and social care

Despite of the holistic patient care approach, the clinic is primarily focused on the medical aspects of patient care. Accordingly, the scope of integration in the care pathway is restricted to linking the clinic with the GPs. Because of this medical orientation, social care (e.g. home care) and the social environment (personal caregiver, informal care, patient associations etc.) of the patient are not fully involved in the process. The pathway coordinators or therapists can contact social care in the municipalities to provide recommendations when needed. However the health care need of people

with multimorbidity can only be adequately addressed by a comprehensive approach that includes their social environment.

Continuation of care

The clinic provides a one-time assessment, thus follow-up care is not included. The continuation of care based on the clinic's suggestions depends on the compliance of the GPs and willingness to review the patient's records afterwards.

Patient's involvement

Although patient needs are taken into account, they are not actively involved in the decision-making process e.g. during the multidisciplinary conference. Due to the medical and professional orientation of the conference, attending the conference would probably not be beneficial for the patient. The MD meets the patient after the conference and gets a summary of what the MDs have discussed. The results of the conference serve as a plan for the physician, but because it is written in medical language (in the patient record) – “*communication from doctors to doctors*” (MD) – it does not benefit the patient as such. In addition, the short duration of the multidisciplinary conference (about 20 minutes) raises the question whether there is enough time for all participants to get a comprehensive overview of the patient.

Financial aspects

As the clinic has to function within the regular national funding system, they only get reimbursed for the most expensive medical tests performed during the visit, even though they conduct several additional tests on multimorbid patients. Compared to other hospitals, which conduct these tests during several days, the CMP generates less revenue. This obviously presents a perverse incentive for the clinic to reorganise patient pathways. The perspective of extra funding as an incentive for GP's to participate has the potential to increase the success of the clinic, as patient numbers would increase accordingly. However, currently the overall funding of the hospital is not secure, as the region has indicated to cut the overall budget and every hospital has to contribute to the planned savings.

Although internal evaluations show that the clinic has already achieved savings for the overall health care system, medium or long-term care planning is difficult due to the lack of financial security. Nevertheless the CMP hopes to convince the regional government to continue the programme. Comprehensive external and internal scientific evaluations on the cost-effectiveness of the programme could be crucial in convincing the political system to supply further funding.

Conclusion

Many of the challenges presented above are related to the fact that the clinic focusses on people with multiple chronic conditions. The approach is unique in Denmark and not very common in other European countries yet. The CMP is a positive example of how to innovate care by novel arrangements and by exceeding conventional boundaries of disciplines, professions, organizations and primary and specialized. As the medical doctor of the clinic stated:

“I think we have to continuously address that people will have to work in a different way. It should be part of the specialist’s education, not just to be an expert of one’s own narrow field but also to be able to sit down at the table and listen to what the others say, and to share information... this should be an integral part of any doctor’s education” (MD).

According to the MD, this is what the clinic wants to demonstrate, because they believe this is the future of working in health care.

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Colophon The ICARE4EU project and the selection of 'high potential' programmes

The ICARE4EU project aims to identify, describe, and analyse innovative integrated care practices for people with multimorbidity in European countries, and to disseminate knowledge and experiences from these practices to all European countries in order to support further implementation of effective and sustainable care approaches for European citizens with multimorbidity (www.icare4eu.org).

Multimorbidity is defined in this project as *the presence of two or more medically (somatic or psychiatric) diagnosed chronic (not fully curable) or long lasting (at least six months) diseases, of which at least one is of a primarily somatic nature.*

In 2014, country experts in 31 European countries identified programmes at a national, regional or local level that focus(ed) on providing care for adult (or older) people with multimorbidity, or contain(ed) specific elements for this target group. Programmes had to comprise a formalized cooperation between two or more services, of which at least one medical service; and they had to be evaluated - or had an evaluation planned - in some way. Detailed information about these programmes was collected via a survey to be completed by the programme coordinator. In this way, country experts identified 178 programmes, of which 101 (from 24 countries) were considered eligible for analysis by the project team.

As a next step in the project, these 101 programmes were evaluated by the project team based on quantitative and qualitative criteria. For each programme, five quantitative scores were computed, a general score (assessing general aspects such as its evaluation design, perceived sustainability and transferability) and four scores that provided an indication of its level of 1) patient-centredness, 2) integration of care, 3) use of eHealth technologies and 4) its innovativeness in financing integrated care services. Subsequently, members of the project team qualitatively assessed these four aspects again for a selection of programmes that had high quantitative scores. The qualitative evaluation was based on the available descriptive information gathered by the survey (e.g. description of the aims of the programme, the reported strengths and weaknesses) and already published evaluation reports. This resulted in a short list of so called 'high potential' programmes. To decide whether or not to select a programme of this list for further study, the project team checked with the country expert and/or verified information by contacting the programme coordinator. In this way, eight programmes were selected for a site visit; all programmes positively responded. The eight programmes that were visited were operational in Belgium, Bulgaria, Cyprus, Denmark, Germany, Finland, the Netherlands and Spain.

This case report is based on information about the 'Clinic for Multimorbidity and Polypharmacy', Silkeborg, Denmark. For this case report, the previously collected survey data were verified and enriched by data from internal (e.g. presentations) or external documents and qualitative interviews with the project manager, chief doctor, medical doctor, nurse pathway coordinator, secretary pathway coordinator, clinical pharmacist, physiotherapist, occupational therapist and GP. The interviews were conducted by three members of the ICARE4EU project team, and were recorded. Interviewees received the draft text of the case report for validation, and approved the final report. All interviewees signed a written agreement to publish this case report.

Appendix 1 Some characteristics of the health and social care system in Denmark (8,9,10)

Health care

The major structural reform of 2007 changed the administrative landscape of Denmark by creating larger municipalities and regions and redistributing tasks and responsibilities. At the state level, the Ministry of Health has a governing role over regional and municipal organization and management of health care, as well as the supervision and partial financing of the municipalities and regions. Responsibility for preparing legislation and providing overall guidelines for the health sector lies with the Ministry of Health. The role of the state is mainly to regulate, to contain expenditure and to provide some general guidelines for the health care sector. Planning and regulation take place at both state and local levels. The state is responsible for the overall regulatory and supervisory tasks as well as fiscal functions. Additionally it is increasingly taking responsibility for more specific planning activities, such as quality monitoring and planning of the distribution of medical specialties at the hospital level.

In Denmark, more than 80% of health care expenditure is financed by the state through a combination of block grants and activity-based financing. The municipalities are financed through income taxes (rates set locally, collected centrally) and block grants from the state, while the regions are financed by the state (e.g. income tax, etc.) and the municipalities.

The health care system in Denmark is organized according to three administrative levels: state, region (5 regions) and local (98 municipalities). The Danish health system can be characterized as quite decentralized, because responsibility for primary and secondary health care lies with the regions and municipalities. The five regions are responsible for hospitals as well as for self-employed health care professionals. The regions own and run hospitals, prenatal care centres and community psychiatric units and they finance GPs, specialists, physiotherapists, dentists and pharmaceuticals. Most secondary and tertiary care takes place in general hospitals owned and operated by the regions. At the local level, the municipalities are responsible for disease prevention, health promotion and rehabilitation outside hospitals, as well as other areas of health care such as health visitors and school health services.

The primary sector consists of private (self-employed) practitioners (GPs, specialists, physiotherapists, dentists, chiropractors and pharmacists) and municipal health services, such as nursing homes, home nurses, health visitors and municipal dentists. The GPs act as gatekeepers, referring patients to hospital and specialist treatment.

The Danish health care system is based on a principle of free and equal access for all citizens. Thus, the vast majority of health services in Denmark are free of charge for the users. Voluntary health insurance (VHI) is available for the population. Danish health legislation (the Health Act of 2005) formally provides the right to easy and equal access to health care for all citizens in Denmark; the right to choice of health provider; and the patient's right to information and self-determination.

Social care, long-term care and home care for the elderly

In Denmark the social sector is organized with a high degree of decentralization of social responsibilities to local government. The local authorities (municipalities) have the primary responsibility for social services. The municipalities deliver social services including social welfare allowances (sickness allowances and disability pensions), care for older people and care for disabled people and people with chronic diseases, including those with mental disorders. Municipalities are also responsible for providing housing for mentally disabled and homeless people. Such municipal services are financed through taxes and run primarily by salaried professionals employed by the municipal health authorities. Long-term care is often provided in the patient's home and, therefore, it is usually a task for the municipality. The municipalities are responsible also for nursing homes; nursing homes are actually categorized as a social service and, therefore, are part of the social and not the health administration.

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