Innovative health care approaches for patients with multi-morbidity in Europe

The availability of integrated care programmes including care pathways, and/or addressing poly-pharmacy and patient adherence, for patients with multiple chronic conditions in 31 European countries

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Content

Summary

This report provides a descriptive overview of integrated care programmes for patients with multi-morbidity that have been developed and implemented in EU Member States and other European countries. Healthcare systems in European countries are facing multiple challenges, such as an ageing population, an increase in people suffering from multi-morbidity, and limited financial and human resources for care. Furthermore, most care for patients suffering from multi-morbidity is fragmented and disease-specific. To improve quality (in terms of clinical outcomes and quality from the patient perspective) and sustainability (in terms of financial and human resources) of care, reforming the way healthcare is provided to patients with multi-morbidity is essential. Integrated care has the potential to respond to the challenge of providing good qualitative and sustainable care to patients with multi-morbidity. Integrated care is patient-centred, proactive and well-coordinated multidisciplinary care, using new technologies to support patients' self-management and improve collaboration between caregivers.

Integrated care programmes for patients with multi-morbidity in Europe

This report shows that integrated care programmes are seen as key for the improvement of care for multi-morbid patients in Europe. We traced 119 care programmes targeting patients with multi-morbidity that can be characterised as integrated care programmes. Most integrated care programmes within healthcare for patients with multi-morbidity can be found in Spain (n=22), and are, irrespective of the country, (planned to be) implemented on a local or regional level (n=94). The integrated care programmes share the following common elements: patient-centeredness, an emphasis on coordination of care, improvement of collaboration between (multidisciplinary) caregivers and a focus on outcomes. These programmes involve different disciplines (professional caregivers and/or informal carers) and organisations, and many programmes include the assignment of a case manager for patients. Many care programmes include a care pathway (n=76), address poly-pharmacy (n=62) and/or patient adherence (n=67). A substantial number of integrated care programmes specifically focus on frail elderly (n=47).

Lack of evidence from integrated care programmes addressing multi-morbidity

Little is known about the outcomes or effectiveness of integrated care programmes for patients with multi-morbidity. This is mainly because many of these integrated care programmes have recently started and are not thoroughly evaluated yet. The one controlled study conducted in a European country that we identified did not reveal evidence for a

beneficial effect of integrated care on patient outcomes. However, in the few studies (n=6) that have been evaluated (in non-controlled designs) in European countries positive associations were found between participation in integrated care programmes and multi-morbidity patients' quality of life, patient' satisfaction with the care received, better care planning and referral for patients as well as more appropriate prescribing of medicines and/or a decrease in hospital care utilisation or outpatient visits. So far, it is unknown which (sub)groups of patients benefit the most from integrated care programmes. In this respect, further research is needed. We conclude that in many European countries developments exist to reform healthcare delivery for patients with multi-morbidity by developing and implementing integrated care programmes. So far, evidence of their potential to improve patient outcomes, decrease healthcare utilisation and costs is lacking.

1. Multi-morbidity, a challenge for healthcare systems in Europe

Key messages

- Healthcare systems in Europe are facing multiple challenges: an ageing population, an increase of people suffering from multi-morbidity, and limited financial and human resources for care.
- Until now, most care for patients suffering from multi-morbidity is provided in a fragmented and disease-specific way.
- To improve quality and sustainability of care, reforming the way healthcare is provided to patients with multi-morbidity is essential.
- Especially, integrated care may have the potential to respond to the challenge of delivering high quality care to the growing number of patients with multi-morbidity in Europe.

1.1 Challenges to face

The number of people living with multiple chronic diseases in Europe is estimated at 50 million (Rijken et al., 2013). With aging, the prevalence of multi-morbidity (see Box 1.1) will increase further. Among people over the age of 65 about 65% has multiple chronic diseases; among people over the age of 85 this is estimated at 85% (Marengoni et al., 2011; Vogeli et al., 2007). Consequently, as European populations are ageing, the number of people living with multi-morbidity in Europe is expected to increase. Next to the aging population and increasing presence of multi-morbidity, European countries are facing challenges in terms of limited financial and human resources for care. Increasing healthcare expenditures and the high demand on healthcare labour markets raise concerns about the sustainability of healthcare systems in European countries.

Box 1.1. Definition of multi-morbidity

Multi-morbidity: the occurrence of more than one chronic or long lasting disease within an individual (Bower et al., 2011; Smith et al., 2012). Multi-morbidity is (in this report) also referred to as e.g. co-morbidity, pluripathology, polypathology or complex chronic patients.

1.2 Multi-morbidity: impact and care provided

Multi-morbidity has an influence on several levels: the individual, the quality and organization of healthcare delivery at a local level and the whole healthcare system. Multi-morbidity deeply impacts on the quality of life of patients and their families, and is associated with psychological distress, disability and an increased mortality risk (Marengoni et al., 2011; Fortin et al., 2006).

Because of the comprehensive needs of patients with multiple chronic diseases, multi-morbidity is associated with a high use of (various) health and social care services as well as high public and private costs (Smith et al., 2012). Moreover, it is complex to deliver good quality care for patients with multi-morbidity. First of all because there is a lack of evidence about what good quality care is for patients with (specific) combinations of chronic diseases, which type of healthcare providers should be involved and which of their competencies are needed. Furthermore, there are issues of prioritizing of health problems, poly-pharmacy and patient adherence, the importance to involve patients and families with regard to goal setting, and the fragmentation of organization and financing of services (e.g. Bower et al., 2011; Nuño et al., 2011).

Currently, most care delivery models are disease-specific and therefore not adapted to the needs of patients with multi-morbidity. A disease-specific approach may be too narrow for patients with multiple chronic conditions. As disease-specific clinical practice guidelines may contradict each other and do not sufficiently address aspects of multi-morbidity, this may result in a lack of evidence regarding treatment and subsequently a lack of decision support for healthcare providers. Furthermore, disease-specific models for multi-morbidity patients incorporate the threat of inadequate coordination of care, interference of medicines and interference of advised self-care for co-existing diseases (Boyd et al., 2005; Van Weel & Schellevis, 2006; Greβ et al., 2009).

Poly-pharmacy

A common problem for patients with multi-morbidity is the use of multiple medications, also referred to as poly-pharmacy. Poly-pharmacy can be defined according to the number of medications (e.g. four to ten or more regular medications taken by one individual, e.g. Bushardt et al., 2008; Hajjar et al. 2007; Duerden et al., 2013). Poly-pharmacy is associated with several risks, including adverse drug reactions, risk of medication and disease interactions, inappropriate dosing and adherence ("problematic poly-pharmacy"). On the other hand, patients could benefit from multiple medication use when medications are combined to cure, slow the progression or reduce the symptoms of the disease(s) ("appropriate poly-pharmacy"; Duerden et al., 2013; Bushardt et al., 2008; Payne & Avery, 2011).

The prevalence of poly-pharmacy is considerable and increasing. In 1995, 12 percent of patients in primary care in Scotland were dispensed five or more drugs and 1.9 percent of the patients were handed out ten or more drugs. In 2010, 22 percent of the Scottish patients in

primary care received five or more drugs and 5.8 percent were dispensed ten or more drugs (Guthrie & Makubate, 2012). Studies from e.g. England and Germany have confirmed the increasing prevalence of poly-pharmacy (Duerden et al., 2013; Junius-Walker et al., 2007).

Next to morbidity, poly-pharmacy is associated with age (i.e. increasing rates in older people) and poor self-rated health (Moen et al., 2009). Furthermore, poly-pharmacy and multi-morbidity increase the workload of healthcare providers as they (e.g. doctors, nurses, pharmacists) need to collaborate to optimize their skill-mix (Salisbury et al., 2011). Balancing the risks and benefits of poly-pharmacy is a challenge for both healthcare providers and patients.

Patient adherence

Many patients with multi-morbidity experience difficulty in following (agreed upon) treatment recommendations. According to the WHO, adherence to long-term therapy for chronic illnesses averages 50% (Sabaté, 2003). With the growing burden of multi-morbidity and poly-pharmacy there is a growing impact of poor adherence (Sabaté, 2003). Patient adherence is defined as the extent to which a person's behaviour – taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider (Sabaté, 2003). Consequently, patient adherence requires both input from the healthcare provider and the patient. The care provider needs to be open to and respect the worries, wishes, beliefs and expectations of the patient, and needs to communicate about the effect of medication or lifestyle changes, the use and possible side-effects of the medication. The patient has its own responsibilities and choices to make, with support from the healthcare provider.

1.3 Integrated care

To improve quality (in terms of clinical outcomes and quality defined from the patient's perspective) as well as sustainability (in terms of financial and human resources) of care, reforming the way healthcare is provided to patients with multi-morbidity is essential. Integrated care has the potential to respond to the challenge of providing good qualitative and sustainable care to patients with multi-morbidity. It is characterised as patient-centred, proactive and well-coordinated multidisciplinary care, using new technologies to support patients' self-management and improve collaboration between caregivers (see Box 1.2). As such it intervenes in the provision of care and is expected to improve the quality of care, while making efficient use of resources (Goodwin et al., 2014; Boult et al., 2009). Increasingly, integrated care programmes are implemented in healthcare systems all over the world to

address the comprehensive healthcare needs of multi-morbidity patients (e.g. Goodwin et al., 2014; Nuño et al., 2011). So far, there is insufficient evidence for the beneficial effect of integrated care on patient outcomes, healthcare utilisation and costs. Furthermore, little is known about characteristics of an integrated care programme or approach that may be associated with positive outcomes and about the patient groups that may benefit the most from integrated care (de Bruin et al., 2012).

Care pathways

Care pathways are often part of integrated care, as they are integrated with the delivery of care (Pinder et al., 2005; Sulch et al., 2000; Box 1.2). A care pathway can cover a fragment of the patients' care chain (e.g. from hospitalization to home; from General Practitioner (GP) to nurse to pharmacist) or the entire chain of care for a patient. As for integrated care, there is a growing interest in care pathways in recent years (Pinder et al., 2005). However, most studies examine a disease-specific care pathway (e.g. Brignole et al., 2006; Pinder et al., 2005; Sulch et al., 2000).

Box 1.2. Definitions of integrated care and care pathway

Integrated care: patient-centred, proactive and well-coordinated multidisciplinary care, using new technologies to support patients' self-management and improve collaboration between caregivers. Integrated care is also referred to as e.g. shared care, guided care, transitional care, disease management programmes or comprehensive care programmes (e.g. Goodwin et al., 2014; Nuño et al., 2011; Boult et al., 2009).

Care pathway: a multidisciplinary outline of anticipated care, placed in an appropriate timeframe, to help patients with a specific condition or set of symptoms move progressively through a clinical experience to positive outcomes. Other terms are: clinical pathway, critical pathway, integrated care pathway, care maps (Middleton et al., 2001).

Joint Action on Chronic Diseases (CHRODIS-JA)

In this report we provide a descriptive overview of integrated care programmes for patients with multi-morbidity that have been developed and implemented in EU Member States and other European countries, which is part of the activities performed within the Joint Action on Chronic Diseases (CHRODIS-JA). CHRODIS-JA (2014-2016) is a joint action of the European Commission and the EU Member States, and aims to reduce the burden of chronic diseases on healthcare systems and individuals through prevention, early intervention and appropriate management of chronic diseases. One of its core Work Packages (WP6) specifically focuses on the identification, development and implementation of innovative approaches to multi-

morbidity management. Its aim is to improve the delivery of healthcare for patients with multiple chronic conditions in all EU Member States. WP6 consists of four tasks. The findings described in this report are a result of task 2 (see 'How this report came into being').

1.4 What to expect from this report?

By this report we aim to provide more insight into the characteristics of integrated care programmes developed within healthcare systems in Europe for patients with multi-morbidity. More specifically, integrated care programmes within healthcare including care pathways, and/or addressing issues of poly-pharmacy and/or patient adherence will be described. Furthermore, an overview of the evidence from integrated care programmes addressing multi-morbidity or frailty [1] is provided, i.e. their impact on patient outcomes (e.g. physical, mental and social health status or functioning, quality of life, patient's satisfaction with care) and healthcare utilisation and costs (e.g. utilisation of hospital care, primary care, community care utilisation, and costs).

More specifically, this report will address:

- which integrated care programmes are currently available within healthcare for patients with multi-morbidity in Europe;
- characteristics of these care programmes (e.g. country, aim, population, presence of a care pathway, attention for poly-pharmacy and/or patient adherence);
- the impact of integrated care programmes for patients with multi-morbidity (positively and negatively) on patient outcomes, healthcare utilisation and costs.

European countries and regions are expected to respond with different strategies and approaches to the challenge of multi-morbidity, due to the variation in contexts and specific problems. This diversity in contexts, strategies and practices will provide a valuable source to gain more insight in which approaches are likely to be (more) successful and have the potential to be implemented in other countries and regions as well (if adapted to the specific context). [2] This report is the result of task 2 of WP6: to identify innovative integrated care programmes for patients with multi-morbidity that are available in Europe. The next step (task 3) will be to identify elements or components of 'good practices' in this report by an international, multidisciplinary expert group.

[1] Multi-morbidity is often confounded by frailty (Duerden et al., 2013). Frailty is a common clinical syndrome in older adults that carries an increased risk for poor health outcomes including falls, incident disability, hospitalization, and mortality (Qian-Li Xue, 2011). It is defined as a clinically recognizable state of increased vulnerability resulting from aging-associated decline in reserve and function across multiple physiologic systems such that the ability to cope with everyday or acute stressors is comprised (Qian-Li Xue, 2011).

[2] The expected differences in context of European countries and their policy responses (e.g. approaches, strategies) are discussed in more detail in the report 'Innovating care for people with multiple chronic conditions in Europe: an overview' which has been written as part of the ICARE4EU (Innovative care for people with multiple chronic conditions in Europe) project (Rijken et al., 2013; van der Heide et al., 2015).

1.5 How this report came into being

This report is based on three data sources:

- *Additional questions from the ICARE4EU survey about care pathways, poly-pharmacy and patient adherence.*

  ICARE4EU is a European project covering 31 countries (all EU Member States, Iceland, Norway and Switzerland). The project activities focus on identifying, describing and analysing integrated care strategies addressing multi-morbidity, and disseminating knowledge to improve and monitor multi-morbidity chronic illness care in Europe (see Rijken et al., 2013; van der Heide et al., 2015). For the purpose of this report (and as part of CHRODIS-WP6 task 2), an extra module was developed and added to the ICARE4EU survey conducted among expert organisations in the 31 countries. By means of this extra module additional data about the integrated care programmes were collected on the continuity of multi-morbidity care trajectories (care pathways) within primary and secondary healthcare, issues of adherence to treatment and poly-pharmacy management. For more information about the ICARE4EU project: www.icare4eu.org. Results from this data source are described in Chapter 2. For an overview of all programmes identified and included in the ICARE4EU project, see Appendix 1.

- *Care programmes traced by CHRODIS WP6 partners.*

  In April 2014 and November 2014 CHRODIS WP6 partners [3] were asked to inform NIVEL about all relevant care projects, programmes or studies for multi-morbidity patients in Europe they knew of; more specifically, care programmes including care pathways and/or addressing poly-pharmacy or patient adherence.

  Results from this data source are described in Chapter 2 and Chapter 3. For an overview of all programmes (that met the pre-set inclusion criteria) reported by CHRODIS WP6 partners, see Appendix 2.

- *Systematic review of international literature describing the effectiveness of integrated care programmes for people with multi-morbidity*

  To gain insight into the effectiveness of integrated care programmes for multi-morbidity patients a systematic literature review was performed (Hopman et al., in preparation), by updating the review of de Bruin and colleagues (2012). A systematic literature search was performed in multiple electronic databases for English language papers published between

[3] AIFA, Italy; VULSK, Lithuania; TUD, Germany; Norvegian Directory of Health, Norway; Public Health Institute, Croatia; SOTIRA, Spain; ISCIII, Spain; IACS, Spain; Comunitat Valenciana, Spain; Bioef, Spain; THL, Finland; NCPHA, Bulgaria; EPF, Europe; individual partners from France, Italy, Spain, Slovenia, Greece, Malta.

January 2011 and March 2014, supplemented by reference tracking and a manual search on the internet. After inclusion, the methodological quality of each study was assessed and a best-evidence synthesis was applied to draw conclusions. Results concerning European studies that were included this review are described in Chapter 3.

2. Integrated care programmes for patients with multi-morbidity in Europe

Key messages

- In Spain the highest number of care programmes for patients with multi-morbidity within healthcare was identified.
- Most integrated care programmes are (planned to be) implemented on a local or regional level.
- Integration of care (sectors or disciplines) and continuity of care are seen as key for the improvement of care for multi-morbidity patients.
- The integrated care programmes share the following common elements: patient-centeredness, an emphasis on coordination of care, improvement of collaboration between (multidisciplinary) caregivers and a focus on outcomes.
- The integrated care programmes involve different disciplines of professional caregivers, (sometimes also informal carers) and organisations, and many programmes include the assignment of a case manager to patients.
- The majority of integrated care programmes include a care pathway, and address poly-pharmacy and/or patient adherence.
- Between one third and a quarter of the integrated care programmes specifically focus on frail elderly.

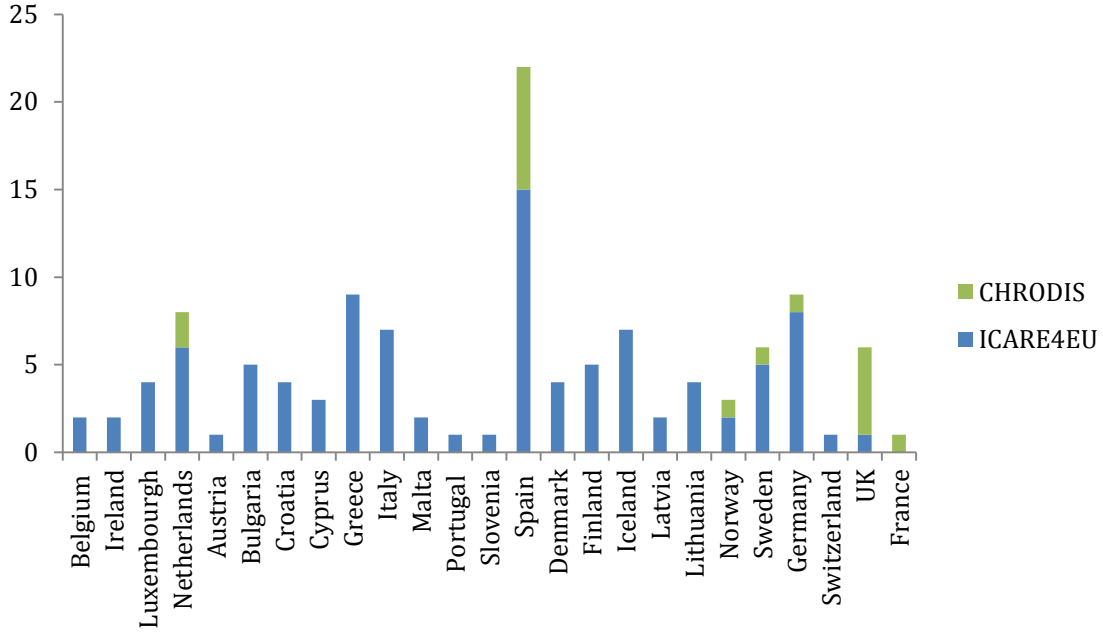
In this chapter we provide an overview of the identified integrated care programmes within healthcare for patients with multi-morbidity in Europe. More specifically, integrated care programmes within healthcare including care pathways, and/or addressing issues of poly-pharmacy and/or patient adherence are described. The care programmes are described per data source (i.e. as derived from the ICARE4EU survey; as reported by CHRODIS WP6 partners).

2.1 Characteristics of care programmes

Derived from ICARE4EU survey:

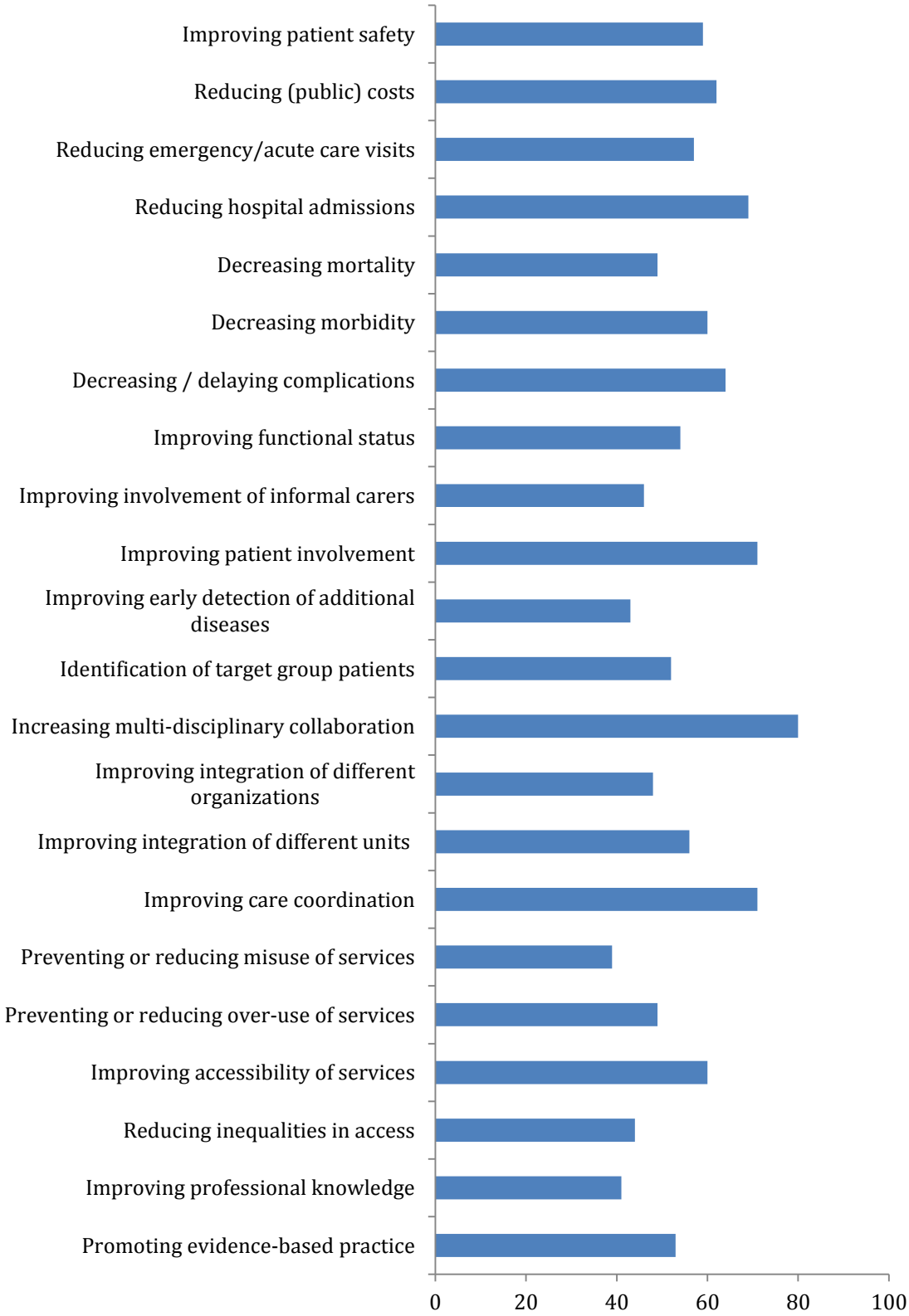
101 integrated care programmes were identified and included by the ICARE4EU project (see Appendix 1). Figure 1 presents the number of studies per country. Most programmes are implemented on a local (n=29) or regional level (n=30) or are locally/regionally implemented as part of a national programme (n=18). Fourteen programmes are implemented on a national level, seven are implemented on a national level as part of an international programme, and three programmes are implemented on an international/supranational level.

Figure 1. Number of care programmes included via ICARE4EU (n=101) and CHRODIS (n=18) per country



The majority (58%) of the care programmes (n=59) are aimed at patients with multi-morbidity in general. Twenty-eight percent of the care programmes (n=28) are developed for patients with a specific diagnosis ('index disease') with a variety of possible co-morbidities. Diabetes type 2, COPD or heart failure are most mentioned as index diseases. Fourteen programmes (14%) focus on a combination of specific chronic conditions. Most common are the combinations of diabetes with hypertension and/or heart disease. Of the 101 integrated care programmes for patients with multi-morbidity, 42 specifically target frail elderly. The main objectives differ per care programme, see figure 2, but the most common objective is to increase multi-disciplinary collaboration.

Figure 2. Main objectives of the care programmes obtained from the ICARE4EU survey in % (N=101) (van der Heide et al., 2015)



All included care programmes involve different types of organisations, as indicated by figure 3. Primary care practices and general hospitals are most often involved in the programmes. Furthermore, on organizational level various activities are established in the programs (see figure 4), such as appointing a case manager who coordinates the care of patients as they move along the care chain (e.g. from primary care to secondary care, to hospital admission and back home).

Figure 3. Organizations involved in the care programmes obtained from the ICARE4EU survey in % (N=101) (van der Heide et al., 2015)

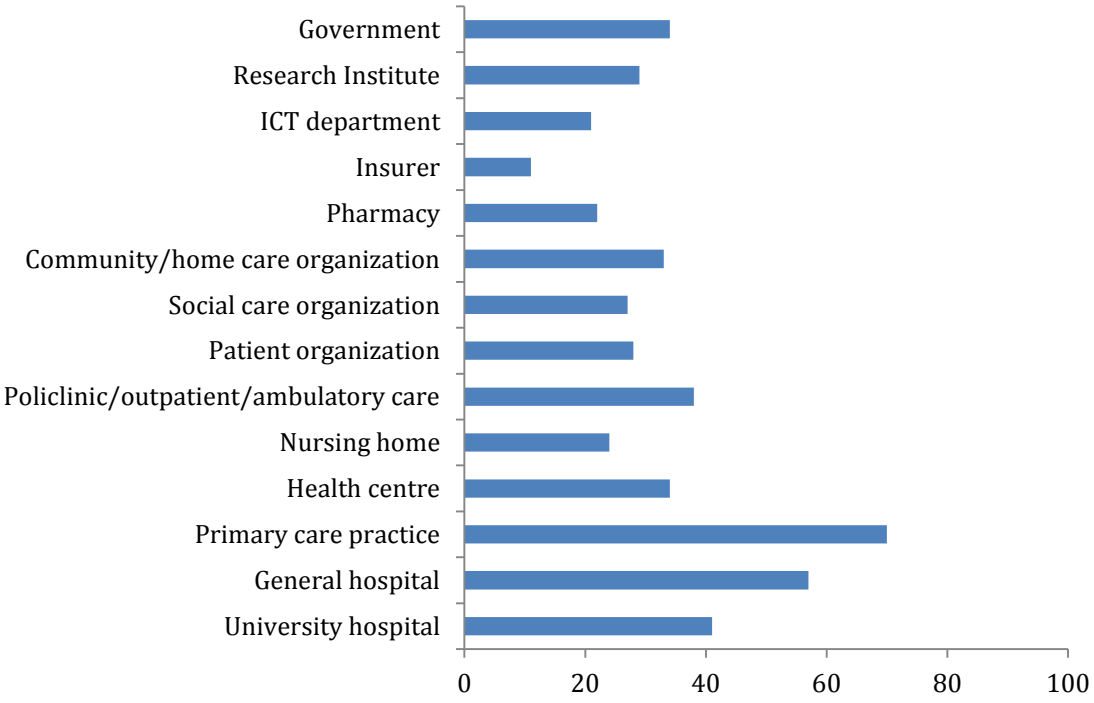
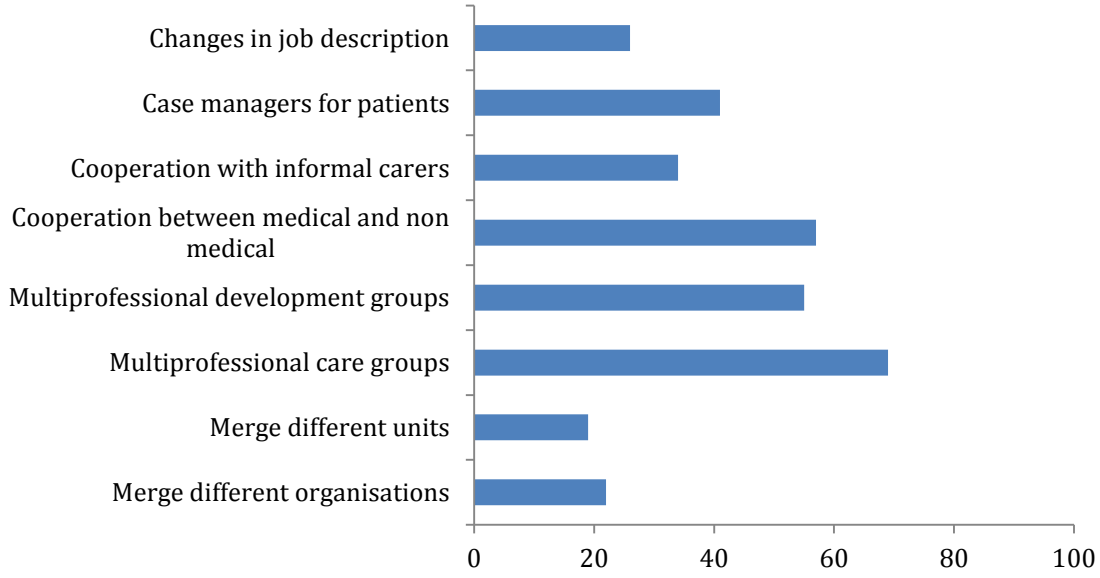


Figure 4. Organizational structures / activities established in the programme obtained from the ICARE4EU survey in % (n=101) (van der Heide et al., 2015)



Identified by CHRODIS WP6 partners:

From the 296 potential care programmes identified by CHRODIS WP6 partners, 18 care programmes fulfilled our inclusion criteria and were not already identified by the ICARE4EU project (see Appendix 2). Most of these programmes are (intended to be) implemented on a regional level (n=16). One programme is planned to be implemented on a European level and one on a local level. Most programmes are aimed at patients with multi-morbidity in general (n=10; Appendix 2, programme 1, 6-9, 11-13, 15 and 16). Five programmes specifically focus on frail elderly (programme 3, 4, 10, 14 and 17). Three other programmes are aimed at a population with a combination of specific chronic diseases (programme 2, 5 and 18). For example, depression in patients with diabetes and/or coronary heart disease (programme 18).The programmes share common elements: e.g. patient-centeredness, an emphasis on coordination of care, improvement of collaboration between (multidisciplinary) caregivers and a focus on outcomes (Nuño et al., 2013). The specific aims of the care programmes are very diverse. For example, the overall aim of programme 10 is to develop a strategy in which the own health care sector is reorganized to better integrate health and social care, facilitating the participation of citizens, and the objective of programme 1 is to reduce avoidable hospitalization for chronic diseases in the elderly by 20% in 2020 and to increase healthy life years and quality of life. The aims of all programmes are described in Appendix 2.

2.2 Care pathways

Derived from ICARE4EU survey:

Seventy-six of the integrated care programmes (75%) are reported to include a care pathway (see figure 5). For 20 programmes a care pathway is a small part of the care programme, for 38 programmes (50%) it is included as a substantial part of the programme. In 18 programmes a care pathway is the central theme of the care programme. Various health professionals are involved in the programmes that include a care pathway (see figure 6). These professionals represent diverse organisations, e.g. primary care practices, pharmacy, nursing home, social care organisation. In 34 programmes that include a care pathway a case manager is assigned for the coordination of care for the patient. Case managers are mostly primary care nurses or/and GPs.

Figure 5. Number of integrated care programmes including care pathways, and/or addressing poly-pharmacy, and/or patient adherence, derived from ICARE4EU survey

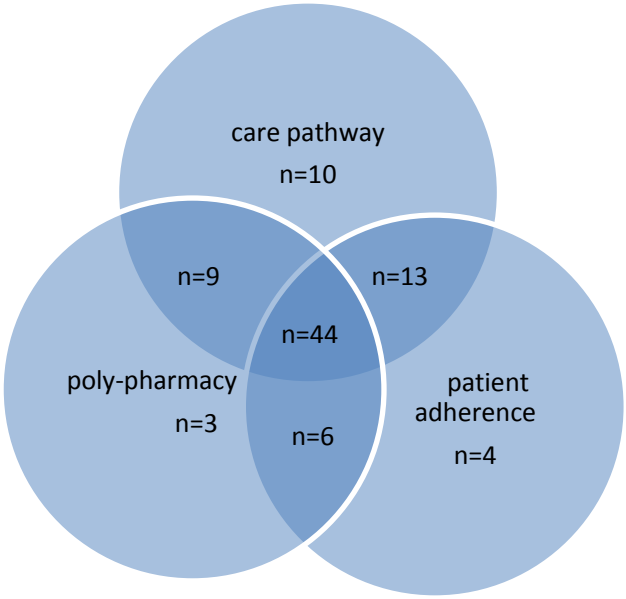
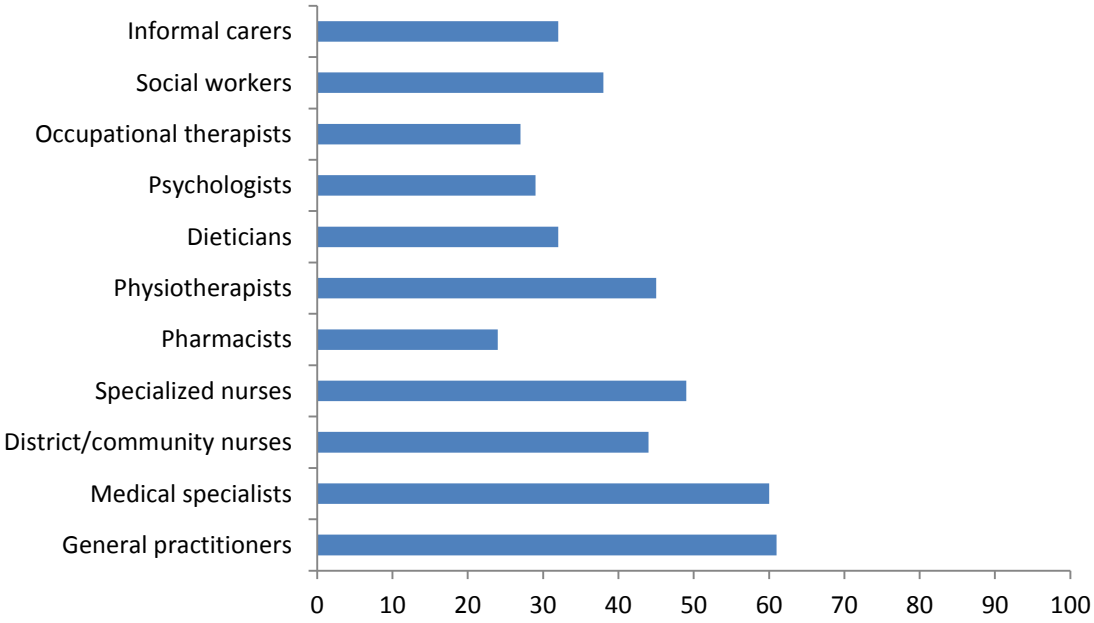


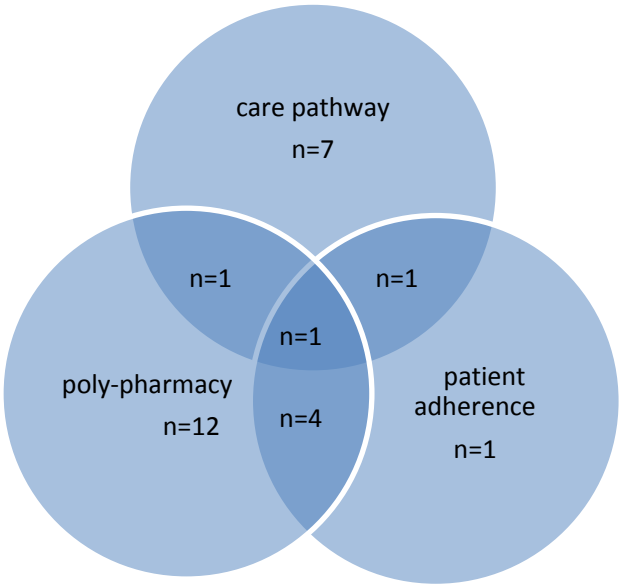
Figure 6. Disciplines in care programmes including care pathways obtained from the ICARE4EU survey in % (n=76)



Identified by CHRODIS WP6 partners:

Ten of the 18 integrated care programmes include a care pathway (programme 1, 2, 4-8, 12, 14 and 17), as presented in figure 7. In these programmes different disciplines are involved in caring for patients with multi-morbidity: primary care, secondary care and district nurses, GPs, pharmacists, social workers and specialists. Two programmes embrace the entire care chain for patients with multi-morbidity (programme 4 and 8). Other programmes include part of the care chain: hospital and primary care (programme 1), primary care (programme 7), primary care, secondary care and social care (programme 17), services linked to GP clusters and integrated teams within zones (programmes 14). Four programmes describe the care pathway only in general terms (programme 2, 5, 6 and 12).

Figure 7. Number of integrated care programmes including care pathways, and/or addressing poly-pharmacy, and/or patient adherence, identified by CHRODIS WP6

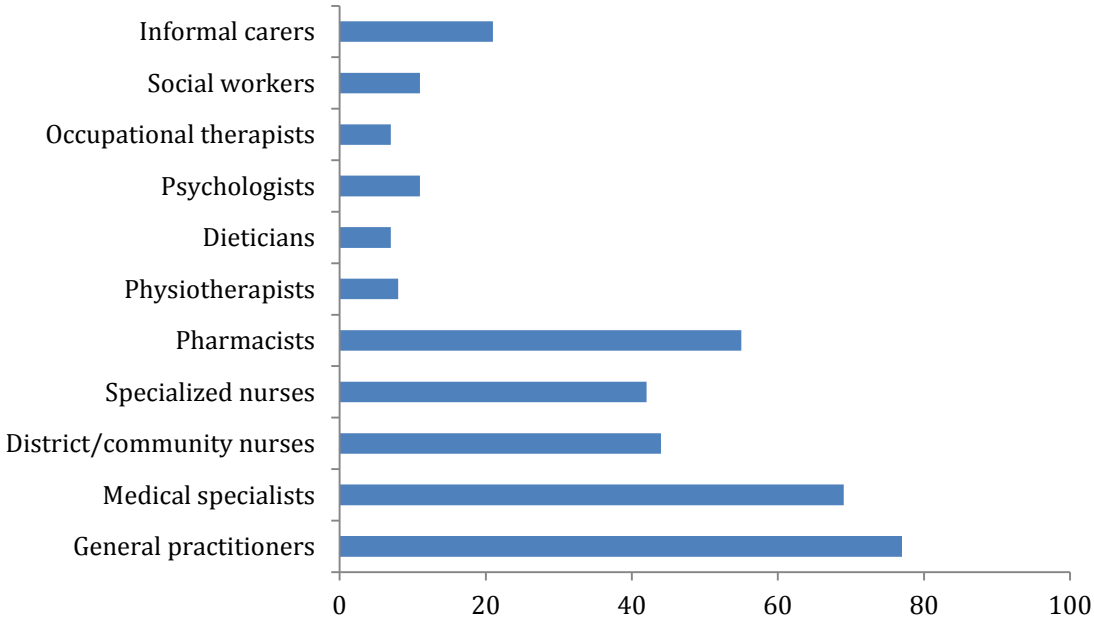


2.3 Poly-pharmacy

Derived from ICARE4EU survey:

Of sixty-two of the 101 programmes (61%) it is reported that these programmes pay attention to poly-pharmacy. For 35 programmes addressing poly-pharmacy is a small part of the programme, for 20 programmes it is a substantial part and for seven programmes managing poly-pharmacy is a main objective. For four programmes it is specifically reported that better management of poly-pharmacy is an aim of the programme and for five programmes it is claimed that attention will be paid to poly-pharmacy, as part of the programme or as part of a guideline. In sixteen programmes one or more healthcare providers (e.g. pharmacist, GP, nurse) are conducting a medication review and four programmes mention (multidisciplinary) meetings or information exchange about poly-pharmacy. Four other programmes include education for healthcare providers or family carers about how to manage poly-pharmacy and two programmes implement a pharmacotherapeutical support tool. The other programmes that address poly-pharmacy (n=25) are very diverse and therefore not described. In 66% (n=41) of the programmes that address poly-pharmacy (n=62) one provider is responsible for the issue of poly-pharmacy. This is usually the GP, nurse or pharmacist. Among the programmes that address poly-pharmacy, various disciplines are involved (see figure 8).

Figure 8. Disciplines in care programmes including poly-pharmacy obtained from the ICARE4EU survey in % (n=62)



Identified by CHRODIS WP6 partners:

Eight of the 18 care programmes address poly-pharmacy (programme 3, 7, 9, 11, 13 and 15-17). One programme uses the pressure of poly-pharmacy (i.e. 5 or more different types of medicines taken by one individual) as an inclusion criterion (programme 13) and in three programmes attention is paid to poly-pharmacy (programme 3, 11 and 15). Three other programmes are using a poly-pharmacy review, by reviewing and updating prescriptions of all used medicines and investigating adverse drug events (programme 7, 16 and 17). One programme aims to implement a pharmacological support tool to prevent drug related problems in patients with multi-morbidity and send standard e-messages to facilitate communication with other clinicians concerning prescription modification undertaken (programme 9).

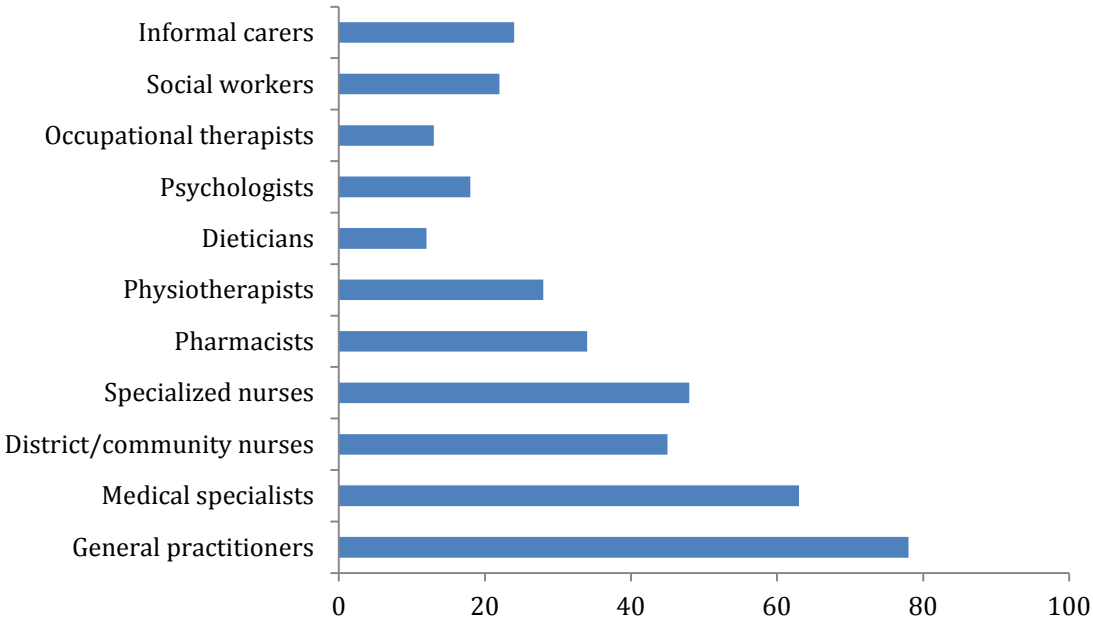
2.4 Patient adherence

Derived from ICARE4EU survey:

Of sixty-seven of the 101 programmes (66%) it is reported that these programmes address patient adherence, see figure 9. For 28 programmes patient adherence is a small part of the programme, for 30 programmes it is a substantial part of the programme and for nine programmes patient adherence is a main objective. Most programmes address patient adherence in general (n=48), fourteen refer to patient adherence to medical treatment, one programme refers to adherence to lifestyle recommendations and two programmes address

patient adherence to both medical treatment and lifestyle recommendations. Different strategies are used to help patients adhere to their treatment. For example, ten programmes use patient education or counselling, in one programme the healthcare professionals are educated and in one programme multidisciplinary meetings to discuss adherence of patients have been set up. In 64% (n=43) of the programmes that address patient adherence (n=67) one provider is responsible for this issue. This is usually the GP or primary care nurse.

Figure 9. Disciplines in care programmes including patient adherence obtained from the ICARE4EU survey in % (n=67)



Identified by CHRODIS WP6 partners:

Seven of the 18 care programmes focus on patient adherence (programme 7-11, 13 and 15). Two programmes address patient adherence to the treatment in general, having no specific focus (programme 8 and 11), three programmes focus on patient adherence with respect to the medical treatment (programme 9, 13 and 15) and two programmes focus on patient adherence to both medical treatment and lifestyle recommendations (programme 7 and 10). For example, adherence to medications, use of inhalers and dietary control (programme 7).

3. Evidence from integrated care programmes addressing multi-morbidity

Key messages

- So far, there is little research on the effectiveness of integrated care programmes in Europe targeting patients with multi-morbidity.
- The one controlled study implemented in a European country that we identified did not reveal evidence for a beneficial effect of integrated care on patient outcomes. However, in the few studies (n=6) that have been evaluated (in non-controlled designs) in European countries positive associations were found between participation in integrated care programmes and multi-morbidity patients' quality of life, patient' satisfaction with the care received, better care planning and referral for patients as well as more appropriate prescribing of medicines and/or a decrease in hospital care utilisation or outpatient visits.
- It is unknown which (sub)groups of patients benefit the most from integrated care programmes.

In this chapter we provide an overview of the evidence for the effectiveness of integrated care programmes addressing multi-morbidity, i.e. their impact on patient outcomes (e.g. physical, mental and social health status or functioning, quality of life, patient' satisfaction with the care received) and healthcare utilisation and costs (e.g. utilisation of hospital care, primary care, community services and costs). The evidence for the effectiveness of the integrated care programmes for patients with multi-morbidity is described per data source (i.e. as derived from the systematic review of Hopman et al. 2015; as identified by CHRODIS WP6 partners).

3.1 Patient outcomes

Derived from systematic review:

Twenty publications evaluating nineteen integrated care programmes were included in the systematic review of Hopman and colleagues (in preparation). Only one programme included an evaluation of an integrated care programme from Europe (i.e. implemented in the Netherlands). This programme was set up to stimulate self-management skills and encourages active involvement in decision-making of frail elderly. Two years after implementation, no effects were found of this integrated care programme on patient outcomes with respect to activities of daily living (i.e. disability, social participation, social support, depression, and fear of falling (Metzelthin et al., 2013)).

Identified by CHRODIS WP6 partners:

From the included care programmes targeting patients with multi-morbidity additionally traced by the WP6 partners (n=18), six studies evaluated the outcomes of the programme in non-controlled designs. Three of these programmes reported patient outcomes. In these studies associations were found between participation in integrated care programmes and patients' enhanced quality of life (programme 4) and/or patients' enhanced satisfaction with the care received (programme 4 and 12) or better care planning and referral for patients as well as more appropriate prescribing of medicines (programme 17).

3.2 Healthcare utilisation and costs

Derived from systematic review:

The only programme from a European country that was included in the systematic review of Hopman and colleagues (in preparation) did not evaluate the effects of integrated care on healthcare utilisation and costs (Metzelthin et al., 2013).

Identified by CHRODIS WP6 partners:

Four of the six programmes reported on healthcare utilisation and/or costs, as evaluated in non-controlled designs. For three programmes it was found that providing integrated care was associated with less healthcare utilisation: i.e. decrease in hospital bed days (programme 14), number of ED visits (programme 6, 8 and 14), hospital admissions (programme 6 and 8), outpatient visits (programme 8), use of residential and nursing homes (programme 14). Furthermore, one programme (programme 4) showed that the provision of integrated care was not cost-effective and about another programme was unclear about the impact of integrated care on healthcare costs (programme 14).

3.3 Who will benefit?

Integrated care programmes are mainly aimed at patients with multi-morbidity in general. However, a substantial part of the programmes we identified is specifically targeting 'frail elderly' (see Chapter 2). Nevertheless, it is still unknown which subgroups of patients might benefit most from integrated care. This underlines the importance of systematically identifying (sub-)groups of patients with multi-morbidity who will benefit from integrated care programmes with specific characteristics.

4. Conclusion and considerations

By this report we aimed to describe the availability and characteristics of integrated care programmes developed within healthcare systems in European countries for patients with multi-morbidity. More specifically, integrated care programmes including care pathways, and/or addressing issues of poly-pharmacy and/or patient adherence were described. Furthermore, an overview of the evidence from integrated care programmes addressing multi-morbidity was provided, i.e. their impact on patient outcomes (e.g. physical, mental and social health status or functioning, quality of life, patient' satisfaction with the care received) and healthcare utilisation and costs (e.g. hospital care, primary care, community services, and costs).

4.1 Identified programmes

This report shows that integrated care programmes are seen as key for the improvement of care for multi-morbid patients in Europe. We traced 119 care programmes targeting patients with multi-morbidity that can be characterised as integrated care programmes. Of all 31 countries considered, Spain had the most integrated programmes reported. This may be due to the fact that the Spanish regions have rather autonomous healthcare systems, in which these programmes are embedded. Irrespective of the country, the great majority of the integrated care programmes for patients with multi-morbidity are (planned to be) implemented on a local or regional level. The integrated care programmes share the following common elements: patient-centeredness, an emphasis on coordination of care, improvement of collaboration between (multidisciplinary) caregivers and a focus on outcomes. These programmes involve different disciplines (professional caregivers and/or informal carers) and organisations, and many programmes include the assignment of a case manager for patients. Many programmes include a care pathway and/or address poly-pharmacy and/or patient adherence. A substantial number of the integrated care programmes specifically focus on frail elderly.

4.2 Evidence

Little is known about the outcomes or effectiveness of the integrated care programmes for patients with multi-morbidity. This is mainly because many of these integrated care programmes have recently started and are not thoroughly evaluated yet. The one controlled study conducted in a European country that we identified did not reveal evidence for a beneficial effect of integrated care on patient outcomes. However, in the few studies that have been evaluated (in non-controlled designs) in European countries, positive associations were

found between participation in integrated care programmes and multi-morbidity patients' quality of life, patient' satisfaction with the care received, better care planning and referral for patients as well as more appropriate prescribing of medicines and/or a decrease in hospital care utilisation or outpatient visits. More research on the effectiveness of integrated care programmes is recommended. Furthermore, research is needed on what (sub)groups of patients benefit the most from integrated care programmes.

4.3 Methodological considerations

This study has several strengths and limitations. A strength of this report is that we used mixed methods (i.e. input from different sources), resulting in a more valid representation of the availability and evidence of integrated care programmes developed within healthcare systems in Europe for patients with multi-morbidity. For example, both methods that were used to identify relevant programmes in Europe, revealed that in Spain the most integrated care programmes seem to have been implemented and that a substantial part of the programmes specifically focus on frail elderly. There are also some limitations. We were dependent on expert organisations and experts for input on integrated care programmes. It is possible that we have missed out on integrated care programmes that were not noticed by the experts. By also including a systematic literature review as information source, we have tried to be as complete as possible in providing an overview of integrated care programmes in European countries. Another important issue to mention is that the identification of an integrated care programme does not automatically mean that the programme is currently available for patients with multi-morbidity. However, it seems reasonable to assume that in countries in which relatively many integrated care programmes for patients with multi-morbidity were identified (as in Spain), the actual availability of integrated care will also be relatively high.

4.4 Conclusion

In many European countries developments exist to reform healthcare delivery for patients with multi-morbidity by developing and implementing integrated care programmes. So far, evidence of their potential to improve patient outcomes, decrease healthcare utilisation and costs is lacking. The next step of the CHRODIS-JA WP6 activities will be to identify elements or components of 'good practices' to provide integrated care to patients with multi-morbidity.

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Appendix 1.

ICARE4EU data: inclusion criteria

Programmes that were included met all following criteria:

- Focus on providing care for adult people with multimorbidity (or contain specific elements for this target group), and
- Should be aimed at a patient target group consisting of people aged 18 and older, with two or more medically (i.e. somatic, psychiatric) diagnosed chronic (not fully curable) or long lasting (at least six months) diseases, of which at least one has a (primarily) somatic/physical nature, and
- Involve one or more medical service(s), and
- Involve cooperation between at least two services (these services may be part of the same organization, for example services within a hospital, or may be part of different organizations, for example between medical care and social care), and
- Have some formal status/formalized cooperation (any form), and
- Are evaluable in some way, and
- Are currently running (2014) or finished less than 24 months ago or start within the next 12 months.

Countries	Reported programmes in 2014 by online ICARE4EU survey	Included programmes
Austria	4	1
Baltic Sea region	1	0
Belgium	10	2
Bulgaria	6	5
Czech Republic	3	0
Croatia	4	4
Cyprus	7[a]	3
Denmark	4	4
Estonia	5	0
England	1	0
Finland	5	5
France	3[b]	0
Greece	10	9
Germany	12[b]	8
Iceland	8	7
Ireland	2	2
Italy	8	7
Latvia	2	2
Lithuania	5	4
Luxembourgh	17	4
Malta	8	2

Countries	Reported programmes in 2014 by online ICARE4EU survey	Included programmes
Netherlands	6	6
Norway	2	2
Portugal	2	1
Slovenia	1	1
Spain	20	15
Sweden	11	5
Switzerland	3	1
UK	2[a]	1
Unclear	8	0
Total	**178**	**101**

a One of these programmes was targeted at patients with multi-morbidity in both the UK and Cyprus and counted ones

b One of these programmes was targeted at patients with multi-morbidity in both France and Germany and counted ones

ICARE4EU data: overview of included programmes per country (n=101)

Programme 1	
Name	Optimale Versorgung von langzeitbeatmeten Patienten unter qualitativen und wirtschaftlichen Aspekten
Country	Austria

Programme 2	
Name	Formes alternatives de soins aux personnes âgées
Country	Belgium

Programme 3	
Name	Samenwerkingsinitiatief EersteLijnsgezondheidszorg (SEL)
Country	Belgium

Programme 4	
Name	Volunteers, patients and physicians – united against diabetes
Country	Bulgaria

Programme 5	
Name	Not available for publication
Country	Bulgaria

Programme 6	
Name	Caritas Home Care for Elderly People
Country	Bulgaria

Programme 7	
Name	Center "Home Care" for assistance to elderly, chronically-ill people and people with disabilities
Country	Bulgaria

Programme 8	
Name	Home care for an independent and dignified life
Country	Bulgaria

Programme 9	
Name	Adherence to Medication
Country	Croatia

Programme 10	
Name	Croatian Registry for Renal Replacement Therapy (CRRRT)
Country	Croatia

Programme 11	
Name	Croatian Psychoses Registry
Country	Croatia

Programme 12	
Name	Croatian National Cancer Registry
Country	Croatia

Programme 13	
Name	PROSAFE- Promoting safety and quality improvement in critical care
Country	Cyprus

Programme 14	
Name	TELEPROMETHEUS: e-Educational Platform for Intensive Care Unit Health Professionals
Country	Cyprus

Programme 15	
Name	TELEREHABILITATION: Post ICU patient telerehabilitation services
Country	Cyprus

Programme 16	
Name	Preventing Multimorbidity - Healthier life in social psychiatry
Country	Denmark

Programme 17	
Name	Deveoplement of disease management programmes for the most commen multimorbidities
Country	Denmark

Programme 18	
Name	Clinic for Multimorbidity and Polypharmacy
Country	Denmark

Programme 19	
Name	Not available for publication
Country	Denmark

Programme 20	
Name	Potku programme - Patient at the Driver's Seat
Country	Finland

Programme 21	
Name	Not available for publication
Country	Finland

Programme 22	
Name	PIRKKA-POTKU (a regional sub-programme of the national POTKU programme (Patient at the Driver's Seat)
Country	Finland

Programme 23	
Name	Not available for publication
Country	Finland

Programme 24	
Name	Not available for publication
Country	Finland

Programme 25	
Name	Erbitte Rücksprache über Form und Umfang der Vorstellung
Country	Germany

Programme 26	
Name	Gesundheitsnetz Qualität und Effizienz eG
Country	Germany

Programme 27	
Name	Not available for publication
Country	Germany

Programme 28	
Name	INVADE - Interventionsprojekt zerebrovaskuläre Erkrankungen und Demenz im Landkreis Ebersberg
Country	Germany

Programme 29	
Name	Netzbezogenes Betreuungsarzt-System mit KOSI-Unterstützung
Country	Germany

Programme 30	
Name	Gesundes Kinzigtal
Country	Germany

Programme 31	
Name	Not available for publication
Country	Germany

Programme 32	
Name	Not available for publication
Country	Germany

Programme 33	
Name	Galilee Palliative Care Unit
Country	Greece

Programme 34	
Name	Mediterraneo Hospital
Country	Greece

Programme 35	
Name	EU-WISE Selfcare for Long-Term Conditions in Europe
Country	Greece

Programme 36	
Name	Aktios Elderly Care Units, Athens - Greece
Country	Greece

Programme 37	
Name	"Sotiria" Hospital e-Health Services
Country	Greece

Programme 38	
Name	Art Palace Elderly Care Unit - www.artpalace.gr
Country	Greece

Programme 39	
Name	REgioNs of Europe WorkINg toGether for HEALTH - Renewing Health
Country	Greece

Programme 40	
Name	Division of Geriatric Psychiatry/ Telepsychogeriatric service
Country	Greece

Programme 41	
Name	Integrated health care for HIV patients
Country	Greece

Programme 42	
Name	Lungrehabiltering
Country	Iceland

Programme 43	
Name	Pain, fibromyalgia and arthritis program
Country	Iceland

Programme 44	
Name	Not available for publication
Country	Iceland

Programme 45	
Name	Not available for publication
Country	Iceland

Programme 46	
Name	Heilsuborg obesity and lifestyle changes
Country	Iceland

Programme 47	
Name	Back- and Neck programme of The Spinal Unit at St. Franciscus' Hospital
Country	Iceland

Programme 48	
Name	Not available for publication
Country	Iceland

Programme 49	
Name	Medications optimisation in multimorbidity
Country	Ireland

Programme 50	
Name	OPTIMAL - OccuPaTIonal therapy self-MAnagement muLtimorbidity
Country	Ireland

Programme 51	
Name	Renewing Health
Country	Italy

Programme 52	
Name	The UP-TECH project, an intervention to support caregivers of Alzheimer’s disease patients in Italy
Country	Italy

Programme 53	
Name	Il Chronic Care Model, il Punto Unico di Accesso e il Team Aziendale degli Specialisti (attuali UVA) per la presa in carico della persona con Demenza (The Chronic Care Model, Single Point of Access and Corporate Team of Specialists for taking charge of the person with dementia)
Country	Italy

Programme 54	
Name	G.O.I.D. (Interdepartmental Operations Group) for the treatment of diabetic foot
Country	Italy

Programme 55	
Name	IGEA: a chronic disease management project for people with Diabetes
Country	Italy

Programme 56	
Name	Progetto MATRICE
Country	Italy

Programme 57	
Name	ARIA
Country	Italy

Programme 58	
Name	Proposals for clients grouping and assessment of necessary amount of services
Country	Latvia

Programme 59	
Name	Not available for publication
Country	Latvia

Programme 60	
Name	Not available for publication
Country	Lithuania

Programme 61	
Name	Development of Integrated care in Alytus city
Country	Lithuania

Programme 62	
Name	Integrated Care Development in Anyksciai District
Country	Lithuania

Programme 63	
Name	Not available for publication
Country	Lithuania

Programme 64	
Name	Programme de réadaptation au domicile du patient âgé polypathologique suite à un accident de santé
Country	Luxembourg

Programme 65	
Name	Clinique de l'Hypertension artérielle
Country	Luxembourg

Programme 66	
Name	Service de rééducation gériatrique - Développement d'une filière gériatrique
Country	Luxembourg

Programme 67	
Name	Clinique de l'obésité
Country	Luxembourg

Programme 68	
Name	Not available for publication
Country	Malta

Programme 69	
Name	Not available for publication
Country	Malta

Programme 70	
Name	Utrecht Proactive Frailty Intervention Trial
Country	Netherlands

Programme 71	
Name	AGEhIV Cohort Study (Comorbidity and aging with HIV infection)
Country	Netherlands

Programme 72	
Name	INCA - the INtegrated Care program
Country	Netherlands

Programme 73	
Name	Een ziekte komt zelden alleen; werkt het Guided Care model bij mensen met multimorbiditeit
Country	Netherlands

Programme 74	
Name	Casemanagement in addition to diabetes management for comorbid type 2 diabetes patients (CasCo).
Country	Netherlands

Programme 75	
Name	Disease Management for Co-morbid Depression and Anxiety (DiMaCoDeA)
Country	Netherlands

Programme 76	
Name	Good patient care pathways for elderly and chronically ill patients in Norwegian municipalities
Country	Norway

Programme 77	
Name	Whole, coordinated and safe pathways in the municipalities
Country	Norway

Programme 78	
Name	National Program for Diabetes
Country	Portugal

Programme 79	
Name	Not available for publication
Country	Slovenia

Programme 80	
Name	Electronic Balanced Scorecard for Patients with Multiple Chronic Conditions.
Country	Spain

Programme 81	
Name	Estrategia de Calidad de los Cuidados de Atención Primaria
Country	Spain

Programme 82	
Name	Programa de Atención al Mayor Polimedicado.
Country	Spain

Programme 83	
Name	Continuidad de cuidados tras un alta hospitalaria
Country	Spain

Programme 84	
Name	Programa integral de atención geriátrica. Unidad de atención a las residencies geriátricas
Country	Spain

Programme 85	
Name	An integrated care procedure for patients with chronic illnesses
Country	Spain

Programme 86	
Name	Programa de Atención al Paciente Crónico y Polimedicado
Country	Spain

Programme 87	
Name	Electronic Health Record System (AP-Madrid): e-Protocols designed for the management of patients with chronic conditions
Country	Spain

Programme 88	
Name	Marco Referencial de la Continuidad de Cuidados en el Servicio Madrileño de Salud
Country	Spain

Programme 89	
Name	Estrategia de Atención a Pacientes con Enfermedades Crónicas en la Comunidad de Madrid
Country	Spain

Programme 90	
Name	Estratificación de la población de acuerdo a su nivel de riesgo.
Country	Spain

Programme 91	
Name	Receta Electrónica
Country	Spain

Programme 91	
Name	Strategy for chronic care in Valencia - Estrategia para la atención a pacientes crónicos en la Comunitat
Country	Spain

Programme 93	
Name	Care of the chronically state of clinical complexity and advanced disease (PCC and MACA) -Programa d'Int
Country	Spain

Programme 94	
Name	HORUS - Historia Clínica en Atención Primaria y Especializada
Country	Spain

Programme 95	
Name	Samordning för Linnea - lokala team med samordningsansvar i Kronobergs län
Country	Sweden

Programme 96	
Name	ViSam modellen
Country	Sweden

Programme 97	
Name	Not available for publication
Country	Sweden

Programme 98	
Name	Not available for publication
Country	Sweden

Programme 99	
Name	Äldres Bästa projekt äldrelots
Country	Sweden

Programme 100	
Name	Patients complexes
Country	Switzerland

Programme 101	
Name	Well Connected: Integrated Care Programme for Worcestershire
Country	UK

Appendix 2

Care programmes for patients with multi-morbidity identified by CHRODIS WP6 partners

Inclusion criteria:

1. Programme/study focused on adult people suffering from multi-morbidity or/and frail elderly. So called 'complex chronic patients', patients with 'co-morbidity' or 'pluripathology' were also included.
2. Programme/study took place within healthcare.
3. Programme/study is currently running (2014) or finished in 2009 or later.
4. Programme study took place in Europe (or European countries in combination with other non-European countries).
5. Integrated care programme, i.e. involve (formal) cooperation between at least two services.

Excluded were:

- Programmes/studies that focused on elderly in the general population (i.e. not a focus on multi-morbidity or frail elderly).
- Programmes/studies that (mainly) focused on patients or elderly in their home environment or in a nursing home (e.g. telehomemonitoring, virtual ward studies were excluded).
- Programmes/studies that mentioned 'multiple medications', but in which it was not clear whether this concerned multi-morbidity patients or patients with one chronic disease. However, if the programme or study concerned four or more medications we considered it to address poly-pharmacy; hence it was included.
- Programmes/studies that were a duplicate of a programme already reported by another CHRODIS WP6 partner or already identified by the ICARE4EU survey.

Included programmes (n=18)

Programme 1	
Name	MACVIA-LR (Multimorbid clinic for chronic diseases)
Country	France
European/national/regional or local	Regional (Languedoc Roussillon: Montpellier, Nîmes)
Date	2013-2015
Initiated by	Combattre les Maladies Chronique pour un Vieillissment Actif en Languedoc Roussillon.
Aim(s) of the programme	To reduce avoidable hospitalizations for chronic diseases in the elderly by 20% in 2020 and increase in Health Life Years (HLY) and Quality of Life (QOL) (full MACVIA-LR project). Specific objectives are the number of patients included in primary care (including remote areas).
Population	Patients with multi/comorbid chronic diseases and/or falls. Aimed at adults and the elderly.
Care pathways	Integrated pathways for chronic diseases have been initiated in hospitals (secondary care) and remote rural areas (primary care, end 2013). They include multi-sectorial care.
Poly-pharmacy	-
Patient's adherence to (medical/ lifestyle) treatment or care programme	-
(Perceived) outcomes	Evaluations will be carried out every 2 years. Reduce avoidable hospitalisations, increase in Health Life Years (HLY) and Quality of Life (QOL).
Contact details	Dr Françoise Radier-Pontal f.radier@offisecure.com

Programme 2	
Name	MANAGE CARE (Active Ageing with Type 2 Diabetes as Model for the Development and Implementation of Innovative Chronic Care Management in Europe)
Country	Germany
European/national/regional or local	European
Date	This programs is currently running (2014)
Initiated by	Technische Universität Dresden, Germany.
Aim(s) of the programme	To develop an innovative Chronic Care Model with applicable standards for clinical pathways as well as guidelines and training curricular for healthcare professionals using these standards. The final deliverable of MANAGE-CARE will be a practical toolkit for the development of chronic care management programs applicable to healthcare management organizations, scientific and medical associations, insurance and payer stakeholders and political partners.
Population	Diabetes type 2 patients in Europe as an example for Chronic Care. Applicable not only for Diabetes type 2 care but also for other chronic diseases (e.g. heart failure/COPD or other chronic diseases). Focus specifically on needs of elderly population, but also on young populations.
Care pathways	Programme will develop patient pathway recommendations that will become the new reference for chronic care management in Europe.
Poly-pharmacy	-
Patient's adherence to (medical/ lifestyle) treatment or care programme	-
(Perceived) outcomes	MANAGE-CARE will develop recommendations for disease management for elderly people living with chronic diseases, including requirements for the use of new technologies, which will have a strong impact on points of care and the development of medical devices used at home.
Contact details	Prof. Peter Schwarz peter.schwarz@uniklinikum-dresden.de PD Dr. Ulrike Rothe ulrike.rothe@tu-dresden.de

Programme 3	
Name	EMBRACE ('SamenOud')
Country	Netherlands
European/national/regional or local	Regional (municipalities of Stadskanaal, Veendam and Pekela)
Date	This program is currently running, started in January 2012
Initiated by	The Department of Health sciences (University Medical Center Groningen, University of Groningen), health insurance company Menzis, and health care organization Meander.
Aim(s) of the programme	Embrace is an Integrated Elderly Care Program: it is a redesign of the care delivery system into personalized, coherent, proactive and preventive care and support for elderly people of 75 years and older. Patients receive a questionnaire each year to screen their health situation for complex care needs and frailty. Data are used for triage of these patients to a suitable level of care. Embrace recognizes three levels of care intensity, resulting in three main profiles. In each general practice an Elderly Care Team (ECT) organizes coherent, suitable, proactive and preventive care for each individual patient. The GP is in charge of this team, which furthermore comprises a district nurse and a social worker (both in the role of case manager), and an Elderly Care Physician (ECP). The ECTs are supported by a local network of medical and non-medical professionals and volunteers.
Population	Frail elderly of 75 years and older in the municipalities of Stadskanaal, Veendam and Pekela (in the North part of the Netherlands). Specific attention to multi-morbid patients and polypharmacy.
Care pathways	-
Poly-pharmacy	Specific attention will be paid to poly-pharmacy.
Patient's adherence to (medical/ lifestyle) treatment or care programme	-
(Perceived) outcomes	Primary outcome variables will be patient outcomes, service use, costs, and quality of care.
Contact details	Dr. Klaske Wynia k.wynia01@umcg.nl Website: http://www.integratedelderlycare.nl/

Programme 4	
Name	The Walcheren Integrated Care Model
Country	Netherlands
European/national/regional or local	Regional (Walcheren)
Date	2010-2013
Initiated by	Erasmus University Rotterdam
Aim(s) of the programme	To improve the quality and efficacy of care given to frail elderly living independently by implementing and evaluating a preventive integrated care model for the frail elderly: The Walcheren Integrated Care Model (WICM).
Population	Frail elderly aged 75 years or older.
Care pathways	The model focuses on the entire chain, from detection to the provision of care, in the fields of prevention, cure, care, welfare and residence, in primary, secondary and tertiary care.
Poly-pharmacy	-
Patient's adherence to (medical/ lifestyle) treatment or care programme	-
(Perceived) outcomes	The WICM proved to enhance the quality of life of frail elderly and their satisfaction with the quality of care, whilst not enhancing their health care use. Informal caregivers reported to feel less burdened. Health professionals experienced an enhanced integration and coordination of care, a better working environment and they were more satisfied with the continuity and quality of care. Their objective burden increased due to non-patient related tasks (e.g. time spent on the multidisciplinary meeting). The model was not cost-effective.
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Programme 5	
Name	Patient-centred care pathways for multi-morbid patients across healthcare settings
Country	Norway
European/national/regional or local	Regional
Date	This programs is currently running (2014). Qualitative study conducted in 2009-2010.
Initiated by	Healthcare managers from the city of Trondheim in cooperation with St. Olavs Hospital and researchers from the Norwegian University of Science and Technology (NTNU) in Central Norway
Aim(s) of the programme	Primary care providers took the initiative to develop a model for integrated care pathways across care levels for older patients in need of home care services after discharge. Initially, the objective was to develop pathways for patients diagnosed with heart failure, COPD and stroke. A common patient-centred care pathway, not disease specific, that could meet the needs of multi-morbid patients was recommended (after the qualitative study).
Population	Older patients in need of home care services after discharge. Specifically, patients diagnosed with heart failure, COPD and stroke.
Care pathways	Initially, the objective was to develop pathways for patients diagnosed with heart failure, COPD and stroke. A common patient-centred care pathway, not disease specific, that could meet the needs of multi-morbid patients was recommended.
Poly-pharmacy	-
Patient's adherence to (medical/ lifestyle) treatment or care programme	-
(Perceived) outcomes	Not yet available/ unknown.
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Programme 6	
Name	The establishment of a continuity of care unit (CCU) composed of an internist, a liaison nurse and a social worker, Bidasoa integrated health organization (IHO)
Country	Spain
European/national/regional or local	Regional (Basque country)
Date	2010-2011
Initiated by	Bidasoa Integrated Health Organisation (Hondarribia, Basque Country, Spain)
Aim(s) of the programme	The aims of the CCU are: to support primary care (PC) and providing one-stop appointments to provide a health care unit for patients with multiple conditions. The referral internist (one for each health centre) is responsible for the admission of patients with complex or multiple conditions in the event that they require admission to hospital. The mission of the CCU is to stabilize patients and facilitate continuity of care by the PC doctor and nurse. These patients have in place a continuity of care plan (CCP) between levels of care. The role of the liaison nurse is to support the patient in his/her transition from hospital to home, where they are followed up by PC. The referral internist visits the health centre every other week to undertake clinical sessions with the PC professionals, and is available to general practitioners at any time for any queries they may have.
Population	Patients with complex or multiple conditions (including combinations of DM, COPD, high blood pressure, heart failure).
Care pathways	Development of integrated care pathways (ICPs): care pathways that specify the relationships between professionals participating in the provision of care related to a specific health problem. In 2011, the ICPs for atrial fibrillation, heart failure (HF) and chronic obstructive pulmonary disease (COPD) were designed.
Poly-pharmacy	-
Patient's adherence to (medical/ lifestyle) treatment or care programme	-
(Perceived) outcomes	The creation of the CCU has resulted in a decrease in hospital admissions and in attendances to the Emergency Department by patients with multiple conditions.
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Programme 7	
Name	Strategy for proactive integrated care for high-risk, high-cost patients
Country	Spain
European/national/regional or local	Regional (four health areas)
Date	Started in 2012
Initiated by	The Baix Empordà Integrated Health Service (SSIBE *Serveis de Salut Integrats Baix Empordà*).
Aim(s) of the programme	Our objective is to be able to define a proactive healthcare strategy for potentially high-cost patients identified using a predictive model. Once defined, this strategy should allow us to divert resources to and tailor interventions for this type of patient. A second objective is to assess whether the interventions adopted are able to decrease the morbidity compared to the expected rates.
Population	High-risk, high-cost patients; complex chronic patients.
Care pathways	Establish a coordinated care pathway for use on discharge to ensure that patient care is well coordinated in primary care.
Poly-pharmacy	Reviewing and updating of prescriptions for complex chronic patients.
Patient's adherence to (medical/ lifestyle) treatment or care programme	Assessment of the level of adherence to medications, attendance to primary care/hospital appointments and more specific issues (such as use of inhalers, dietary control, and social risk).
(Perceived) outcomes	The identification of high-risk, high-cost patients facilitates the task of care of primary care doctors/nurses and continuity with the other levels of care. The intervention defined has been found to be feasible and has made it possible to identify areas of improvement in the monitoring and control of chronic patients by primary care professionals.
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Programme 8	
Name	Focused care for frail chronic patients: impact of a new care pathway
Country	Spain
European/national/regional or local	Local/regional (Barcelona)
Date	2010
Initiated by	Viladecans Hospital, Barcelona, Spain
Aim(s) of the programme	The aims are: 1) To reduce the number of acute admissions and visits to the Emergency Department related to chronic health problems 2)To assess whether integrated care of frail patients on this special care pathway through the Day Hospital in our organization decreases frequent attendance as an outpatient to specialists.
Population	Complex frail patients with multiple pathologies.
Care pathways	Designed and implemented a care pathway for complex frail patients with multiple pathologies, which represents a project in care coordination between levels of healthcare (primary care—hospitals—long-term care facilities) to ensure a community approach to such patients and continuity in their care.
Poly-pharmacy	-
Patient's adherence to (medical/ lifestyle) treatment or care programme	Advise and positive reinforcement by healthcare providers about adherence to therapy and management of multiple health problems toward patients and their relatives (which are family caregivers).
(Perceived) outcomes	A care pathway for frail patients with multiple medical conditions, a care coordination project between primary care, hospitals and extended care facilities, was found to be effective for reducing emergency hospital admissions, outpatient visits to specialists and visits to the Emergency Department. In our sample, we should highlight the fact that in the first six months after patients entered the care pathway those whose caregiver was a relative were less often admitted to hospital and seen in the Emergency Department, compared to those with a professional or institutional caregiver.
Contact details	Ana María Francisco Lucena afrancisco.hv@gencat.cat

Programme 9	
Name	Multiple strategies for clinical medication review and reconciliation of the medication in complex chronic patients improving safety, efficiency and adherence
Country	Spain
European/national/regional or local	Regional (Catalunya)
Date	2011-2015
Initiated by	CatSalut (Catalan Health Service).
Aim(s) of the programme	To promote the safe, effective and efficient use of drugs in order to grant the rational use of medicines. Different interventions to improve medication management are being developed. Main characteristics of these interventions are: patient-centred, participation and comprise of all the organizations from the territory, healthcare professionals coordination and integrated work, multidisciplinary team work.
Population	Chronic patients and specifically Chronic Complex patients (defined as people with multiple long-term conditions, hospitalizations and use of resources).
Care pathways	-
Poly-pharmacy	The implementation of an electronic prescription system and other pharmacological support tools to prevent drug related problems and standard e-messages to facilitate communication with other clinicians concerning prescription modification undertaken.
Patient's adherence to (medical/ lifestyle) treatment or care programme	Implement processes on medication review, medication reconciliation and adherence in all the organizations.
(Perceived) outcomes	Establish indicators and tools to evaluate the outcomes of the program. Implementation is expected to obtain the following outcomes: 1) improved prescription security through reduced duplication, interaction, contraindicated medications, polypharmacy, number of inappropriate medications and therapeutic cascade in chronic patients; 2) improve the appropriateness of drug treatments; 3) improve medication effectiveness and efficiency; 4) improve patient's adherence to treatments when they have been previously reviewed and afterwards agreed with the patient.
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Programme 10	
Name	FEDON
Country	Spain
European/national/regional or local	Regional (Murcia)
Date	Started in 2013
Initiated by	Consejería de Sanidad y Politica Social, Region de Murcia.
Aim(s) of the programme	In general: to develop a strategy in which the own health care sector is reorganized to better integrate health and social care, facilitating the participation of citizens. More specific: To develop, implement and evaluate a local experience which includes: 1) a set of educational activities essential for the management of chronic disease conditions that foster the autonomy of patients and their caregivers; 2) ICT platforms that facilitate a two-way communication between patients/caregivers and health care providers; 3) integration between hospital records, primary care and social workers ensuring better delivery with safety and convenience for the patients/caregivers.
Population	Persons aged 65 years or older from a geographical area (containing both rural and urban settings), whom have either at least a health risk factor or a chronic disease. Also persons who are more in need or at risk of limited literacy.
Care pathways	-
Poly-pharmacy	-
Patient's adherence to (medical/ lifestyle) treatment or care programme	To achieve better adherence to health prescriptions. Pharmacological and non-pharmacological.
(Perceived) outcomes	Project is in design phase. Outcomes will include: adherence to health indications, pharmacological and non-pharmacological, quality of life, self-perceived health status, cost-effectiveness and acceptance of the intervention.
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Programme 11	
Name	Adhiérete: assessment of pharmaceutical care services on adherence for elderly chronic and polymedicated patients
Country	Spain
European/national/regional or local	Regional (Barcelona, Vizcaya, Cáceres, Badajoz)
Date	This program is currently running (2014)
Initiated by	Consejo General de Colegios Oficiales de Farmacéuticos de Espana (General Council of Pharmacists Chambers of Spain).
Aim(s) of the programme	Main aim: To improve adherence for patients > 65 years old who are chronically ill and poly-medicated. Other aims: increase patient's quality of life, detect drug related problems in order to reduce adverse drugs events and improve medicines management, assess the impact of e-prescriptions in terms of efficacy and effectiveness to medication adherence, improve collaborations between doctors and pharmacists, improve the relationship between patient and pharmacist, assess value of pharmacy ICT systems in terms of improved adherence to treatment, contribute to a sustainable and efficient health system by assessing the impact of pharmacy led interventions to adherence.
Population	Patients > 65 years old who are chronically ill and poly-medicated and non-adherent to their treatment.
Care pathways	-
Poly-pharmacy	Specifically aimed at patients with polypharmacy (and chronically ill and non-adherent).
Patient's adherence to (medical/ lifestyle) treatment or care programme	Improving (medication) adherence is one of the main aims.
(Perceived) outcomes	Perceived outcomes: improvement in patient adherence, improvement in health outcomes, reduction in number of hospitalizations, reduction in number of emergency visits, improvement in patient's quality of life, degree of satisfaction of patients.
Contact details	Sonia Ruiz sruizmo@redfarma.org

Programme 12	
Name	Population Intervention Plans (PIP's)
Country	Spain
European/national/regional or local	Regional (Basque country)
Date	2009-2012
Initiated by	Department of Health of the Basque Country
Aim(s) of the programme	To improve healthcare (in Basque Country) considering chronic pathology and morbidity.
Population	The following groups of patients according to the layers of the pyramid of Kaiser : 1) pluripathology patients (case management); 2) patients with DM, COPD, HF (disease management); 3) physical activity in diabetes, coronary risk, detoxification and smoking cessation and influenza vaccination (self-management/ prevention and promotion).
Care pathways	The PIP defined their criteria based on prevalence of chronic diseases and advancing path existence in the coordination between levels of care.
Poly-pharmacy	-
Patient's adherence to (medical/ lifestyle) treatment or care programme	-
(Perceived) outcomes	Citizens of Basque Country have expressed their satisfaction and positive perception of their health system (higher than average users). Furthermore, 16% of the people identified as a target for case management have been actively intervened (high complexity patients), 26% of the population identified as disease management (medium complexity patients) have been intervened, 2% of the population is currently (2012) participating in self-management programs.
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Programme 13	
Name	The Skåne model for medication review and reconciliation
Country	Sweden (already implemented in Norway)
European/national/regional or local	Regional (Skåne)
Date	2013
Initiated by	Region Skåne/ Skåne County Council
Aim(s) of the programme	At least 40% of all patients, 75 years or older with 5 or more types of prescribed medication should have received a cross-professional medication review according to a specific Skåne model. Secondly, at least 70% of discharged patients over 75 years with more than five types of prescribed medicines should receive a medical screening prior to leaving.
Population	Patients aged 75 years or older with 5 or more types of prescribed medication.
Care pathways	-
Poly-pharmacy	Study includes patients aged 75 years or older with 5 or more types of prescribed medication (i.e. polypharmacy).
Patient's adherence to (medical/ lifestyle) treatment or care programme	Adherence to medication guidelines.
(Perceived) outcomes	Skåne model results in safer care and better health for patients (as implemented in Norway). Specific aims of 2013 not yet evaluated.
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Programme 14	
Name	The Torbay Model
Country	UK
European/national/regional or local	Regional (Torbay and South Devon)
Date	2000-to the present (2014)
Initiated by	Torbay & South Devon Health and Care Trust
Aim(s) of the programme	To improve quality of care for users, simplify access, reduce number of assessments, improve referral times, improve independence and reduce hospitalisations by integrating community health and social care services in Torbay. Mrs Smith as a case study (a fictitious 80-year-old user of a fragmented range of services). The South Devon and Torbay clinical commissioning group have recently introduced proactive case management of at-risk older people, using predictive risk tools. This has provided an added capability to intervene before hospitalisation occurs.
Population	Frail elderly; elderly with complex needs/ high risk of hospital admission (including long-term conditions and complex co-morbidities)
Care pathways	Referral pathways were judged to be the priority for improvement because separate routes existed for each profession, some were unnecessarily complex and some were unsupported by information technology. The key question was how the service should be organised: as a centralised specialist service overseeing the pathway between hospital and home (which is the usual model), or linked to GP clusters and the integrated teams within zones. The latter option was chosen and it improved access to intermediate care in the home, which was an important recommendation in the national study of intermediate care (Intermediate Care National Evaluation Team 2006). In Torbay, it meant that the need for formal referral to a separate intermediate care service was eliminated.
Poly-pharmacy	-
Patient's adherence to (medical/ lifestyle) treatment or care programme	-
(Perceived) outcomes	The results of integration include reduced use of hospital beds, low rates of emergency hospital admissions for those aged over 65, and minimal delayed transfers of care. Use of residential and nursing homes has fallen and at the same time there has been an increase in the use of home care services. There has been increasing uptake of direct payments in social care and favourable ratings from the Care Quality Commission.
Contact details	Dr Nick Goodwin, International Foundation for Integrated Care. Lara Sonola and Veronika Thiel, The King's Fund London.

Programme 15	
Name	Appropriate prescribing for patients and polypharmacy guidance for review of quality, safe and effective use of medication
Country	UK
European/national/regional or local	Regional (Scotland)
Date	Started in 2012
Initiated by	NHS 24 (representing NHS Scotland).
Aim(s) of the programme	Enhance the role of pharmacists and encourage closer working with GPs and community services providing personalized care for long-term conditions and minor ailments to ensure people get the best results from their medicines. Aligning it with other specific medicines interventions Scotland will have a coherent quality program to drive safe, effective, person centred practice and deliver pharmaceutical care that improves adherence and clinical outcomes.
Population	People with multiple long term conditions and polypharmacy. Especially people identified at risk of emergency admission.
Care pathways	-
Poly-pharmacy	Specifically aimed at patients with polypharmacy (and multiple long term conditions).
Patient's adherence to (medical/ lifestyle) treatment or care programme	Improving medication adherence is a main objective.
(Perceived) outcomes	Feedback from health boards on the impact of ongoing reviews (i.e. medication reviews), together with feedback from pharmacists and GPs undertaking the reviews. A previous study with a similar tool (among frail elderly) showed that prescriptions are improved and also patient safety is improved.
Contact details	Alpana Mair alpana.mair@scotland.gsi.gov.uk

Programme 16	
Name	Achieving benefits for patients by levering the use of risk prediction to support anticipatory care planning at scale through the General Practice contract
Country	UK
European/national/regional or local	Regional (Scotland)
Date	2013-2014
Initiated by	NHS Scotland
Aim(s) of the programme	Acknowledging the potential benefit for patients, their carers, and local health and care service providers, Anticipatory Care Planning and Polypharmacy Review was agreed as part of the Quality and Productivity domain of the General Medical Services contract in Scotland for 2013-2015. This domain assigns GPs the resources required to enable them to identify, review and then co-produce an anticipatory care plan with patients and their carers at significant risk of future emergency admission to hospital.
Population	Patients who benefit most from an anticipatory care plans and poly-pharmacy review: Long-term conditions and multi-morbidity. Patients at significant risk of future emergency admission to hospital.
Care pathways	-
Poly-pharmacy	Poly-pharmacy review is part of the aim.
Patient's adherence to (medical/ lifestyle) treatment or care programme	-
(Perceived) outcomes	Anticipatory Care Planning combined with a review for medicines for people prescribed multiple drugs can help reduce the risk of medication harm.
Contact details	Dr John Nugent john.nugent@scotland.gsi.gov.uk Anne Hendry anne.hendry@scotland.gsi.gov.uk Susan Bishop susan.bishop2@scotland.gsi.gov.uk

Programme 17	
Name	SPARRA (Scottish Patients at Risk of Readmission and Admission): Risk prediction in the community
Country	UK
European/national/regional or local	Regional (Scotland)
Date	Started in 2012
Initiated by	The Information Services Division Scotland
Aim(s) of the programme	SPARRA helps practitioners plan and co-ordinate the care and support for people with complex or frequently changing needs, achieving a better experience and outcomes for the patient and avoiding emergency hospitalization. Regular use of SPARRA data should also prompt discussions at multi-disciplinary, multi-agency team meetings with practices or other settings and helps make best use of people, resources and services.
Population	Three different cohorts: a younger chaotic lifestyle group, a long term conditions cohort and a frail elderly group.
Care pathways	New community pathways are further being developed between primary care, social care and secondary care as a result of using a more integrated approach to patient case management in the community.
Poly-pharmacy	Poly-pharmacy review is part of the programme.
Patient's adherence to (medical/ lifestyle) treatment or care programme	-
(Perceived) outcomes	SPARRA has helped to identify patients earlier, before they require intervention from acute secondary services. Primary and community care interventions include better care planning and referral for patients, and more appropriate prescribing of medicines. Improved secondary care outcomes should include a reduction in the expected number of readmissions, the number of hospital beds used and a reduced length of stay for patients who have had a community intervention.
Contact details	http://www.isdscotland.org/Health-Topics/Health-and-Social-Community-Care/SPARRA/

Programme 18	
Name	COINCIDE trail
Country	UK
European/national/regional or local	Regional (North West of the UK)
Date	This program started in 2012, anticipated end date 2013
Initiated by	University of Manchester
Aim(s) of the programme	COINCIDE trial will test the effectiveness of collaborative care in the UK for patients with depression and a long-term condition (i.e. diabetes and/or coronary heart disease).
Population	Care for depression in people with diabetes type 1 or 2 and/or coronary heart disease.
Care pathways	-
Poly-pharmacy	-
Patient's adherence to (medical/ lifestyle) treatment or care programme	-
(Perceived) outcomes	We will measure levels of depression at study entry and at six month follow-up to evaluate if patients receiving collaborative care have lower levels of depression, compared to those that received usual care. The trial will also evaluate the extent to which patients have utilized health care services and examine the cost-effectiveness of collaborative care.
Contact details	Dr. Andrea Cherrington Andrea.cherrington@manchester.ac.uk Website: http://clahrc-gm.nihr.ac.uk/coincide/