POLICY BRIEF 25

How can eHealth improve care for people with multimorbidity in Europe?

Francesco Barbabella

Maria Gabriella Melchiorre

Sabrina Quattrini

Roberta Papa

Giovanni Lamura

On behalf of the ICARE4EU consortium

ICARE4EU

European
Observatory
on Health Systems and Policies
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This policy brief is one of a new series to meet the needs of policy-makers and health system managers. The aim is to develop key messages to support evidence-informed policy-making and the editors will continue to strengthen the series by working with authors to improve the consideration given to policy options and implementation.

What is a Policy Brief?

A policy brief is a short publication specifically designed to provide policy-makers with evidence on a policy question or priority. Policy briefs:

- Bring together existing evidence and present it in an accessible format
- Use systematic methods and make these transparent so that users can have confidence in the material
- Tailor the way evidence is identified and synthesised to reflect the nature of the policy question and the evidence available
- Are underpinned by a formal and rigorous open peer review process to ensure the independence of the evidence presented.

Each brief has a one page key messages section; a two page executive summary giving a succinct overview of the findings; and a 20 page review setting out the evidence. The idea is to provide instant access to key information and additional detail for those involved in drafting, informing or advising on the policy issue.

Policy briefs provide evidence for policy-makers not policy advice. They do not seek to explain or advocate a policy position but to set out clearly what is known about it. They may outline the evidence on different prospective policy options and on implementation issues, but they do not promote a particular option or act as a manual for implementation.

Contents

Authors

Francesco Barbabella, Research Fellow, Centre for Socio-Economic Research on Ageing, National Institute of Health and Science on Ageing (INRCA), Italy; Researcher, Department of Health and Caring Sciences, Linnaeus University, Sweden

Maria Gabriella Melchiorre, Senior Researcher, Centre for Socio-Economic Research on Ageing, National Institute of Health and Science on Ageing (INRCA), Italy

Sabrina Quattrini, Senior Researcher, Centre for Socio-Economic Research on Ageing, National Institute of Health and Science on Ageing (INRCA), Italy

Roberta Papa, Statistician, Centre for Socio-Economic Research on Ageing, National Institute of Health and Science on Ageing (INRCA), Italy

Giovanni Lamura, Director, Centre for Socio-Economic Research on Ageing, National Institute of Health and Science on Ageing (INRCA), Italy

What is ICARE4EU?

The Innovating care for people with multiple chronic conditions in Europe (ICARE4EU) project aims to improve care for people with multiple chronic conditions (multimorbidity) in European countries (www.icare4eu.org). An estimated 50 million people in Europe live with multimorbidity. The complex health problems of these people and their need for continuous and multidisciplinary care pose a great challenge to health systems and social services. From a patient perspective, improvements in, for example, the coordination of care and patients' own involvement in the decision-making and the care process are also important. ICARE4EU describes and analyses innovative integrated care approaches for people with multiple chronic conditions in Europe. By disseminating knowledge about innovative care programmes or practices, the ICARE4EU project aims to contribute to the improved design, wider applicability and more effective implementation of integrated care for people with multimorbidity. Observations from the ICARE4EU project are described in five policy briefs and key elements of multimorbidity care are addressed from the following perspectives: patient-centredness [1], use of eHealth technology (this policy brief), integration [2] and financing systems [3]. A final policy brief [4] integrates all lessons learned from the ICARE4EU project on how care in European countries could be improved for their citizens with multiple chronic conditions.

How do Policy Briefs bring the evidence together?

There is no one single way of collecting evidence to inform policy-making. Different approaches are appropriate for different policy issues, so the Observatory briefs draw on a mix of methodologies (see Figure A) and explain transparently the different methods used and how these have been combined. This allows users to understand the nature and limits of the evidence.

There are two main 'categories' of briefs that can be distinguished by method and further 'sub-sets' of briefs that can be mapped along a spectrum:

• **A rapid evidence assessment:** This is a targeted review of the available literature and requires authors to define key terms, set out explicit search strategies and be clear about what is excluded.

• **Comparative country mapping:** These use a case study approach and combine document reviews and consultation with appropriate technical and country experts. These fall into two groups depending on whether they prioritize depth or breadth.

• **Introductory overview:** These briefs have a different objective to the rapid evidence assessments but use a similar methodological approach. Literature is targeted and reviewed with the aim of explaining a subject to 'beginners'.

Most briefs, however, will draw on a mix of methods and it is for this reason that a 'methods' box is included in the introduction to each brief, signalling transparently that methods are explicit, robust and replicable, and showing how they are appropriate to the policy question.

Figure A: The policy brief spectrum
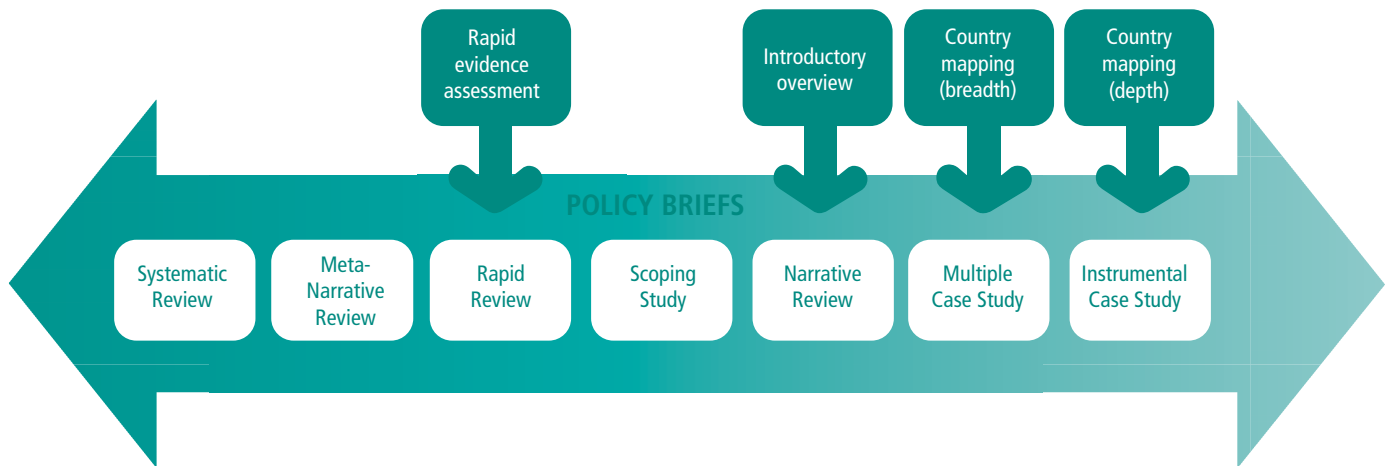
Source: Erica Richardson

Acronyms

AAL	Active and Assisted Living
AIM	Advanced Informatics in Medicine
CBeHIS	Cross-Border eHealth Information Services
CCM	Chronic Care Model
CEF	Connecting Europe Facility
CIP	Competitiveness and Innovative Framework Programme
COPD	chronic obstructive pulmonary disease
CVRM	cardiovascular risk management
DESI	Digital Economy and Society Index
DM2	diabetes mellitus type 2
DSM	Digital Single Market
DSS	decision support system
eCCM	eHealth Enhanced Chronic Care Model
eHDSI	eHealth Digital Service Infrastructure
eHGI	eHealth Governance Initiative
EHR	electronic health record
eID	electronic health identifier
EIPAHA	European Innovation Partnership for Active and Healthy Ageing
EU	European Union
GDP	gross domestic product
GP	general practitioner (physician providing general or family medicine)
ICARE4EU	Innovating care for people with multiple chronic conditions in Europe
ICT	information and communications technology
ICU	intensive care unit
INCA	Integrated Care
IT	information technology
OECD	Organisation for Economic Co-operation and Development
PHR	patient health record
POTKU	Potilas Kuljettajan Paikalle (Putting the Patient in the Driver's Seat) project
SME	small and medium-sized enterprises
WHO	World Health Organization

Boxes, figure and tables

Key terms

- **eHealth** is an umbrella term that covers a wide range of health and care services delivered through information and communication technologies (ICTs), such as electronic health records (EHRs), health information systems, remote monitoring and consultation services (e.g. telehealth, telemedicine, telecare), tools for self-management, and health data analytics.

- **mHealth** is a subset of eHealth that is linked to mobile telephony and applications.

- **Multimorbidity** means having multiple chronic conditions at the same time and (typically) complex needs that require the involvement of several care providers. It is a significant and growing challenge to Europe's health systems, with some 50 million people already affected.

Key messages

- eHealth has the potential to improve care and offer new services for people with multimorbidity. It could allow providers and policy-makers to:
  - coordinate and integrate different elements of care better, by improving communication and the sharing of information between professionals and with patients through message systems or electronic EHRs;
  - support self-management through tools to provide feedback or check adherence to treatment;
  - improve clinicians' decision-making and the quality of care through decision support systems (DSSs), which help share evidence on dealing with the complexities of multimorbidity;
  - monitor and analyse risk to identify the most complex cases and allow proactive responses;
  - improve access to health care services for people with multimorbidity in rural and deprived areas through telehealth services or mHealth applications.

- eHealth is not yet a major component in most health systems. If it is to fulfil its potential, policy-makers need to address gaps in regulation and increase standardization in the national and European contexts. This means:
  - designing adequate legal and funding frameworks;
  - defining standards for and regulation on interoperability of eHealth solutions for remote consultation, monitoring and care;
  - fostering standardization of DSSs by care providers at the national level;
  - promoting new regulations and frameworks for mobile health solutions for self-management, resolving the uncertain legal status;
  - implementing personal health records that are accessible to patients;
  - refining and implementing a concrete road map for compatibility and standardization of EHRs, e-referrals, ePrescriptions and health information systems within and between EU Member States.

- Concrete initiatives to extend professional and patient uptake might usefully include personal health records, DSSs and information systems for risk stratification.

- Comprehensive training and educational campaigns will be important in improving the digital health literacy of patients, informal carers and care professionals.

- Large-scale studies are needed to evaluate the impact of eHealth tools (rather than small-scale research, which cannot evaluate effectively).

Executive summary

The policy issue: the added value of eHealth for people with multimorbidity

Care for people with multiple chronic conditions (multimorbidity) requires integrated and patient-centred approaches to adequately meet patient needs. Information and communication technology (ICT) applied in the health care sector (eHealth) constitutes a recognized driver of innovation and improvement in providing tailored and innovative care services to people with complex care needs.

Despite the growing investment and interest in eHealth, there are challenges ahead for allowing a wider and more systematic adoption of ICT in the health care sector. This policy brief synthesizes available evidence on the implementation, benefits and policies related to the adoption of eHealth solutions for integrated care for people with multimorbidity in Europe.

Implementation

The situation for the implementation of eHealth in terms of the availability of ICT infrastructure, services and skills is still quite varied across Europe. For example, although 27 out of 47 countries in the World Health Organization (WHO) European Region have a national electronic health record (EHR) system in place, the majority of hospitals in the European Union (EU) and Associate Countries (90%) do not permit patients to access their own health data and only 9% provide any kind of telemonitoring service, with a similar percentage of general practitioners (GPs) having access to telehealth services (10%).

Of the 85 innovative programmes for multimorbidity care using at least one eHealth tool selected by the ICARE4EU project, almost half were already integrated into the health care system but the scale remained mostly local and/or regional (78%). The main types of eHealth solutions in the programmes were EHRs (71%), professionals' databases of patient data (64%) and ICT-based communication between care providers (47%), whereas no more than one third of the programmes has adopted the other types of eHealth tools.

Benefits

eHealth solutions for multimorbidity care provide the following benefits:

- *Improving access to health care services:* especially in rural and deprived areas with low (or no) availability of health care services, eHealth tools can enable remote consultations, therapies and rehabilitation.

- *Enhancing care coordination and integration:* eHealth solutions can help with collecting, storing and reporting health data to professionals and to patients via EHRs and patient health records (PHRs). eHealth tools can also improve communication between these actors through systems for messaging and audio-visual communication.

- *Enabling self-management:* supporting people with multimorbidity living at home includes tools that educate and empower them in self-care. Self-management tools can provide feedback and support patients by checking their coping behaviours and adherence to treatment.

- *Supporting decision-making by clinicians:* decision support systems (DSSs) can link available clinical evidence on appropriate treatments and best practice for the complex profile of people with multimorbidity, improving the quality of care provided.

- *Enabling monitoring, risk analysis and proactive intervention:* an information system for risk stratification can monitor and predict health risks in a population, as well as indicating recommended strategies for prevention, monitoring and treatment.

Policies

The potential of eHealth for multimorbidity care is not yet sustained in a systematic and explicit way by current policies. At the EU level, the issues of chronic care and multimorbidity, together with personalized health care and intelligent environments within the eHealth sector, have become a policy priority only with the eHealth Action Plan 2012–2020. Previously, the EU policy focus was on stimulating the general development and implementation of EHRs and health information networks to enable and improve health data exchange between different care providers and nations.

At national level, there is increasing interest in dedicating attention to eHealth in general, but there is a mixed impact at the operative level. There is the risk that, in some cases, policies are just symbolic and aimed at complying with current international policy trends, but with marginal effects in terms of the actual design, development and implementation of eHealth services.

Policy implications

To encourage the improvement of care for people with multimorbidity through eHealth in European health systems, policies need:

- to refine and implement a concrete road map for achieving compatibility and standardization of EHRs, e-referrals, ePrescriptions and health information systems within and between EU Member States;

- to foster personalized medicine services through enhanced EHRs and electronic health identifiers (eIDs) which can enable and realize PHRs for use by patients themselves;

- to identify key public health priorities for people with multimorbidity nationally and support the scaling up of remote consultation, monitoring and care services;

- to define common public health objectives across EU Member States for different profiles of people with complex care needs and regulate jointly on interoperability and requirements of eHealth solutions for remote consultation, monitoring and care;

- to foster the awareness, standardization and adoption of DSSs by care providers at national level;

- to promote the awareness, standardization and adoption of information systems for analysing the risk stratification of populations at regional and national levels;

- to plan new promotion campaigns to encourage patients, informal carers and health professionals to improve their digital health literacy;

- to dedicate innovation, research and development funds, and design new regulations in the field of mHealth solutions in order to increase their opportunities and mitigate their risks;

- to privilege the allocation of research funding to large-scale studies and trials aimed at verifying the effectiveness, efficiency and impact of eHealth solutions for people with multimorbidity.

Policy brief

Introduction

The challenges related to the increasing number of people living with multiple chronic conditions – multimorbidity – are well-known. Over 50 million people in the EU have multiple chronic conditions [6] and around 60% of people aged 65 years and over are estimated to live with multimorbidity [7], with major consequences such as functional impairment, lower quality of life and higher health care utilization and costs [8,9].

Multimorbidity is associated with a higher number of primary care consultations, hospital outpatient visits and hospital admissions, which increases the workload of health care staff [10,11]. However, national health care systems in Europe are not designed to adequately meet the care needs of people with multimorbidity, as care services are still fragmented and oriented to managing single diseases instead of complex conditions [12]. There is a risk that people with multimorbidity may receive inadequate care, which can then have a negative impact on their health and quality of life, as well as the health and quality of life of their informal carers.

New opportunities enabled by the application and exploitation of ICTs in the health care sector could substantially improve patient-centredness and care integration, which are both fundamental aspects of multimorbidity care. As widely recognized [5,13–16], eHealth is a driver of innovation and leads to several benefits for people with chronic conditions and multimorbidity, care professionals, and the health and social care systems. It contributes to several key opportunities for European societies, including: a more personalized 'citizen-centric' health care [5]; empowering patients to become more independent and able to self-manage their conditions, where possible; overall quality of life of patients and their family carers; effectiveness and efficiency of care systems through the optimization of resources and indirect benefits from more appropriate care.

Furthermore, in terms of social inclusion and equality, access to health care services can be harder for people with lower socioeconomic status, for a variety of reasons including unaffordability and residence in deprived areas which also have a lack of infrastructure, typically associated with the presence of multiple chronic conditions [17,18]. ICTs can help improve accessibility through, for example, the implementation of telehealth services for remote consultations and monitoring [19–21]. In addition, several social and economic benefits for health care systems and welfare states have been noted. For instance, just the systematic adoption of mobile Health (mHealth) solutions in the EU would allow: saving €99 billion in total annual health care expenditure; extending the professional lives of more than 11 million people with chronic diseases; and increasing the general domestic product (GDP) of the EU by €93 billion [22].

Box 1: What is eHealth?

eHealth has been defined by the European Commission as "the use of ICT in health products, services and processes combined with organizational change in health care systems and new skills, in order to improve health of citizens, efficiency and productivity in health care delivery, and the economic and social value of health" [5].

Box 2: Methods

For policy-making, insights from practice and from scientific literature are useful and provide information on health care changes, which can lead to more patient-centred, integrated care. Therefore, this policy brief combines a rapid review of the research literature with results from a survey conducted within the ICARE4EU project (see Appendices 1 and 2). The literature review focused on identifying publications on the adoption of eHealth and ICT for chronic or multimorbidity care. Under the ICARE4EU project, information was gathered on 101 innovative programmes in 24 European countries, eight of which were visited to obtain a more in-depth understanding of the particular characteristics of these programmes and to produce case study reports. Appendix 2 provides detailed information on this research into innovative care practices in European countries.

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eHealth is actually an umbrella term that includes a wide range of ICT solutions (see Box 1). Overall, it is estimated that the global eHealth market will be valued at around €280 billion by 2022 [23], with a growing and consistent segment in the EU. For mHealth solutions alone in Europe, this market is projected to grow from €0.6 to €6.4 billion in the period 2013–2018 [24]. eHealth is a key sector for the digitalization process in the digital economy and society according to the EU Digital Single Market (DSM) Strategy [25,26], reinforced also by recent priorities in the New Skills Agenda [27] and Digitalising European Industry strategy [28].

Despite the potential of eHealth, both in general and for multimorbidity care, there are challenges in allowing a wider and more systematic adoption of ICTs in the health care sector. Indeed, the progress of eHealth implementation, in general but especially for multimorbidity care, is still quite limited in the EU [16,29,30].

Therefore, this policy brief aims to deepen and disseminate the available knowledge about the implementation, benefits and policies related to the adoption of eHealth solutions for integrated care for people with multimorbidity in Europe. Policy-makers at EU, national and local levels can use this brief to promote eHealth for people with multimorbidity and to inform adequate development and implementation strategies. Furthermore, care professionals, non-profit organizations, companies and any other stakeholder working with people with multiple chronic diseases and ICTs can get new insights into the current state of eHealth in Europe.

Policy questions

This Brief focuses on the specific policy question: **How can eHealth improve care for people with multimorbidity in Europe?** It presents relevant findings in the field, including programmes with high potential, and highlights current policies in the field. Three main sub-questions were identified:

1. *Implementation: What eHealth solutions are available for people with multimorbidity?*

2. *Benefits: What are the positive outcomes of eHealth solutions for people with multimorbidity?*

3. *Policies: What are the current policies concerning the adoption of eHealth for people with multimorbidity?*

Each sub-question is explored in the Findings through an analysis of available evidence and information collected from various sources (see Box 2).

Findings

Implementation of eHealth solutions for people with multimorbidity

Even if access to and the use of digital technologies by citizens is improving across the EU, national contexts are still quite different in terms of availability of ICT infrastructure, services and skills among populations. The Digital Economy and Society Index (DESI) 2016 [31] shows that Member States are moving forward in the digitalization of public services (including eHealth), but the variation between countries is still wide (the index ranges from 0.331 in Bulgaria to 0.866 in Estonia, where 1 would be a perfect score) and EU countries are at very different stages of digital development.

This situation is well reflected in eHealth, where Member States have adopted different implementation strategies. Available data indicate that general eHealth services (not specific to multimorbidity care) are not yet systematically employed. According to data from a recent survey (2015) involving 47 countries in the European region [16], EHRs were the most widespread and well-established tools, with 27 countries (59%) saying a national EHR system is in place, with around half of these working across both primary and secondary care facility networks. Telehealth programmes were implemented in the health care sector at national or international level in half of the countries, while there was a growing interest in mHealth services sponsored by national governments (22 countries), with most of these services already established at a national level (mainly providing access to emergency lines, health call centres, health information and EHRs). However, information systems for risk stratification, which analyse big data sets at the population level, were not yet developed and could not be mapped, revealing that health data analytics is still in its infancy in Europe.

Furthermore, in 2012–2013, 41% of hospitals in Europe were halfway between a fully paper-based non-digitized environment and an electronic, paperless environment,

Table 1: General characteristics of the programmes for multimorbidity care with at least one eHealth tool
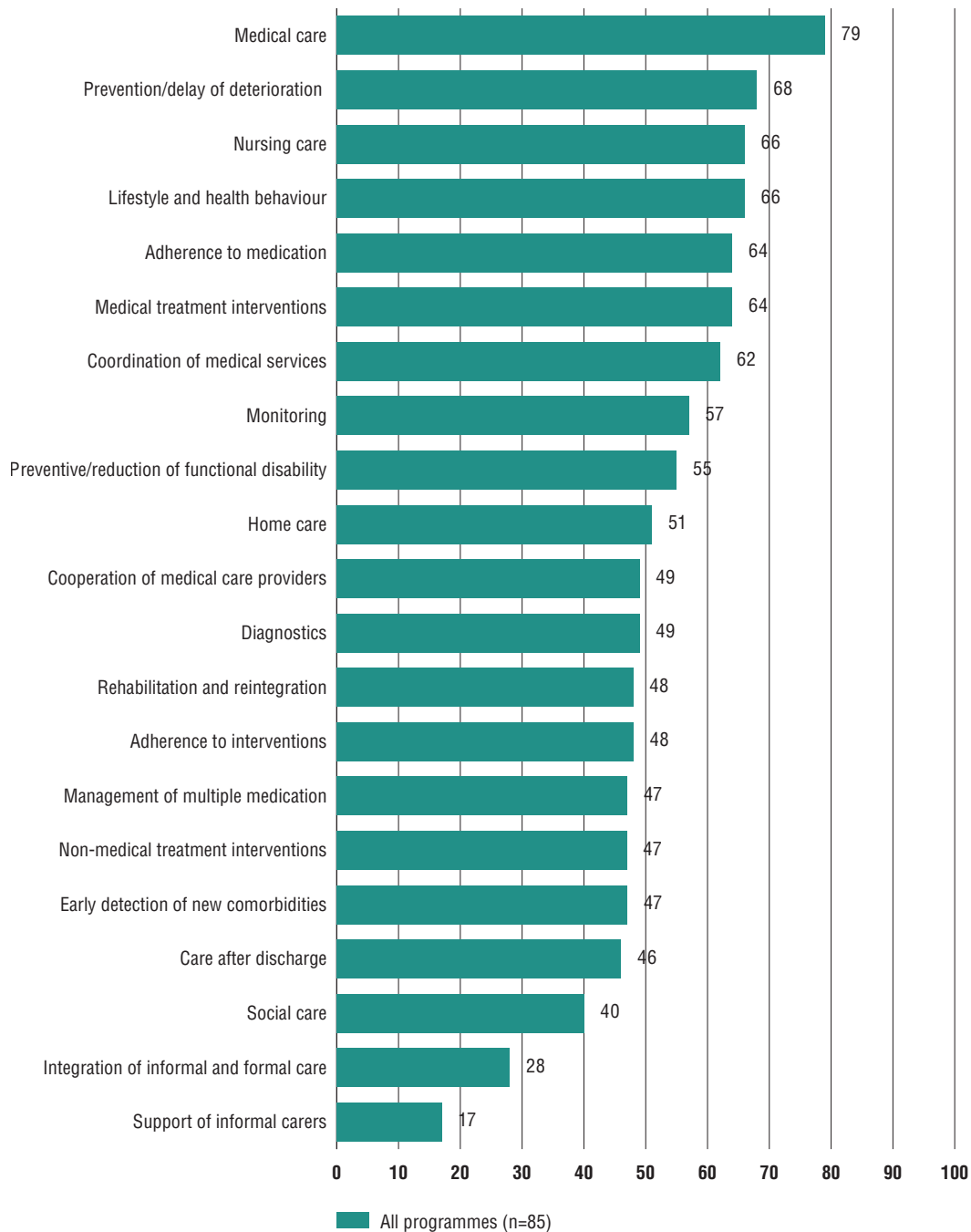
	All programmes n=85
Integration level	
Small-scale (pilot) programme	26%
Well-established and comprehensive programme	29%
Fully integrated in the health care system	45%
Operational level	
Only at level of daily patient care	34%
Only at level of policy/management	4%
Both at policy/management and patient care level	62%
Implementation level	
Local	26%
Regional	34%
Local/regional, as part of a national programme	18%
National	13%
National, as part of an international programme	6%
International	4%
Geographical coverage	
Only rural	5%
Only urban	13%
Both rural and urban areas	82%

and over 80% had an EHR system [32,33]. Almost 80% of the hospitals surveyed were online, 57% had a formal strategic information technology (IT) plan, and almost 50% had videoconferencing facilities. However, most of the hospitals (63%) allocated less than 3% of their budget to netechnologies, 90% of them did not permit patients to access their own health data and around half did not share data with primary care providers, external specialists and other hospitals. Furthermore, only 9% of hospitals provided any kind of telemonitoring services. Other research, covering 31 European countries [34], also found a lack of eHealth adoption in primary care facilities. Using a Composite Index of eHealth Adoption in Primary Care, the research found that only 25% of GPs reported patients requesting online prescriptions and appointments, and less than 10% reported telehealth services were available in their practice.

Specific data on the implementation of eHealth solutions for multimorbidity care come from the ICARE4EU project [6], which mapped a set of high-potential programmes dedicated to people with multiple chronic conditions across 31 European countries. These data show that, out of 101 programmes identified, 85 programmes included at least one eHealth tool. Table 1 summarizes general characteristics of these programmes by their levels of integration with health care systems, maturity, implementation and geographical coverage. Almost half of programmes were already integrated into the health care system, and covered both rural and urban areas in 80% of cases. Although 62% of the programmes claimed to operate at both policy/management and patient care levels, the scale of the initiatives remained mostly local and/or regional (78% overall).

The main types of care provided using eHealth tools in these programmes were (see Figure 1): medical care (79%), prevention or delay of cognitive deterioration (68%),

Figure 1: Types of care and support provided by programmes for multimorbidity care with at least one eHealth tool (%, multiple answers were possible)

Type of care	%
Medical care	79
Prevention/delay of deterioration	68
Nursing care	66
Lifestyle and health behaviour	66
Adherence to medication	64
Medical treatment interventions	64
Coordination of medical services	62
Monitoring	57
Preventive/reduction of functional disability	55
Home care	51
Cooperation of medical care providers	49
Diagnostics	49
Rehabilitation and reintegration	48
Adherence to interventions	48
Management of multiple medication	47
Non-medical treatment interventions	47
Early detection of new comorbidities	47
Care after discharge	46
Social care	40
Integration of informal and formal care	28
Support of informal carers	17

All programmes (n=85)

nursing care (66%), promotion of healthy lifestyle and behaviours (66%).

The eHealth solutions adopted were classified in four different types by their main functions. The typology was built by adapting elements from the Chronic Care Model (CCM) [35] and the eHealth Enhanced Chronic Care Model (eCCM) [36], in order to account for the eHealth diversity and to structure findings. The four types of eHealth are ICT tools for: Self-Management; Remote Consultation, Monitoring and Care; Health care Management; Health Data Analytics (see Box 3). A wide variety of eHealth solutions was identified, as shown in Table 2. The tools implemented by most selected programmes are EHRs (71%), professionals' own databases of patient data (64%) and ICT-based communication between care providers (47%), which come under Health care Management. No more than one third of programmes were using the other eHealth tools, with self-management decision supports (4%) the least frequently implemented.

Box 3: Types of eHealth solutions for multimorbidity care

- **Self-Management:** ICT tools used by patients to manage their health more independently. Self-management tools include computerized systems – e.g. computers, tablets, mHealth, wearable devices or other assistive technologies – which promote care management and provide health advice and reminders. Also, specific tools for informal carers to co-manage care activities or to get direct support for their own psychological, emotional or social needs.

- **Remote Consultation, Monitoring and Care:** ICT tools used for providing and enhancing the remote interaction between people with multimorbidity and health professionals. Remote eHealth solutions include the consultations and visits at a distance that are typical of telehealth and telemedicine services, as well as continuous monitoring of specific conditions, behaviours and safety (telemonitoring and telecare systems). Specific tools can also improve communication, such as online scheduling of clinical appointments, ePrescriptions and direct communication with health care staff.

- **Health care Management:** ICT tools are used for improving the integration, quality and efficiency of care processes within and between care providers. Such eHealth tools include EHRs and health information systems for their registration, reproduction and sharing between professionals, eventually allowing the individual to access and use them as PHRs. Furthermore, ICT tools can improve the speed and consistency of collaboration and communication between care professionals involved in multimorbidity care.

- **Health Data Analytics:** ICT tools based on information systems that exploit and analyse data in patient databases and/or clinical evidence for prevention, monitoring or treatment purposes. DSSs are used by health professionals to improve clinical decision-making in individual complex cases. Risk stratification systems monitor the health data of a regional or national population, with the possibility of identifying people with multimorbidity and with specific health risks, which may have the potential to support preventative, monitoring or treatment strategies as necessary.

Benefits of eHealth solutions in multimorbidity care

eHealth is already perceived to be a potential driver for innovation in care services more broadly, but also for people with chronic diseases and multimorbidity, by having a positive impact on patients, their informal carers, the health workforce and health care systems in general. However, there is a need to understand what tools are effective for which outcomes, as eHealth covers a wide range of different technologies and services. Table 3 presents a framework of eHealth solutions with their envisioned benefits for people with chronic conditions or multimorbidity, informal carers and health care systems. The robustness of the evidence presented is also indicated (robust=R; limited=L; none=N).

In general, eHealth tools for Self-Management and Remote Consultation, Monitoring and Care are those where evidence is most robust and well established, also for people with chronic conditions and multimorbidity. There is less literature on tools for Health care Management and Health Data Analytics in multimorbidity care, but with some promising results in other target groups.

Table 2: Types of eHealth tools used in the programmes for multimorbidity care

	All programmes n=85
Self-Management	
Electronic reminders	26%
Computerized self-management tools	25%
Online decision supports	4%
Remote Consultation, Monitoring and Care	
Monitoring of health status parameters by providers	33%
Communication between care provider and patient (e.g., ePrescription)	29%
Remote monitoring or interaction (e.g. video, phone)	27%
Online appointment scheduling	26%
Registration of health status parameters by patients	25%
Health care Management	
EHRs used	71%
EHRs planned	13%
PHRs used	18%
PHRs planned	7%
Databases with patients' health data	64%
ICT-based communication between care providers	47%
Systems providing warning messages, recommendations and useful information	35%
E-referral systems	33%
Electronic reminders	27%
Health Data Analytics	
Computerized decision supports	35%
Online decision supports	15%

The analysis of findings from the ICARE4EU project also identified several benefits of eHealth, particularly for people with multimorbidity and for the health professionals involved in their care. Most of the 85 programmes using eHealth solutions stated that integration and quality of care, as well as improvements in management processes, were their key objectives and that these were mostly achieved during implementation. Evaluations were carried out in 80% of the programmes (46% only internally, but 24% both internally and externally), mostly in terms of process evaluation (69%) and direct outcomes (43%). The ICARE4EU project identified the following key benefits of eHealth for multimorbidity care:

- **Improving access to health care services:** especially in rural and deprived areas with low (or no) availability of health care services, eHealth tools can enable remote consultations, treatment and rehabilitation. The resulting improved access is particularly beneficial to people with complex health needs such as multimorbidity. An example is given by the TeleRehabilitation programme, a remote cardio-respiratory rehabilitation service, managed by the Nicosia General Hospital in Cyprus (Box 4) [62].

- **Enhancing care coordination and integration:** the absence of data sets that compile patients' medical histories frequently poses a challenge for the treatment of people with multimorbidity who have to visit multiple health professionals. eHealth solutions can

Table 3: Framework of eHealth solutions for multimorbidity care and envisaged benefits

	Tools	Envisaged benefits	State of evidence	
			eHealth in general	eHealth for chronic or multimorbidity care
Self-Management	• Computerized systems for care management, health advice and reminders • mHealth and assistive technologies supporting daily activities in the home	• Patients: improved health, wellbeing and quality of life; self-empowerment; improved independence in daily life; adherence to treatment; improved peer support. • Health care system: reduced inappropriate access to services; reduced workload for health staff (especially in primary care); reduction of inappropriate hospitalizations and length of stay.	R [22,24,37]	R [15,38–42]
	• ICT tools enabling integration of informal and formal care • ICT tools enabling direct psychological, emotional or social support to the informal carer	• Informal carers: decreased burden and improved psychological wellbeing; improved care management; improved reconciliation with other life spheres (e.g. work, family, social activities). • Health care system: reduction of inappropriate hospitalizations and length of stay; improved efficiency.	R [43,44]	R [42,45]
Remote Consultation, Monitoring and Care	• Telehealth and telemedicine systems • Health, activity and behaviour monitoring systems • Environmental sensors • Telecare systems (1st, 2nd, 3rd generation)	• Patients: improved health, wellbeing and quality of life; improved access to health care services; continuity of care; tailored care; lower costs for face-to-face consultations (travel and time). • Health care system: continuous monitoring and collection of health data; early warning and proactive interventions; reduction of inappropriate hospitalizations and length of stay; improved efficiency.	R [14,43, 46,47]	R [19–21, 41,47]
	• ICT tools enabling communication between patients, carers and health professionals • ePrescription systems	• Patients: improved patient–provider communication; improved access to health care services; continuity of care; tailored care; lower costs for face-to-face consultations (travel and time). • Health care system: efficiency in workload management; immediate response.	R [47–50]	R [15,47, 51,52]
Health care Management	• Electronic health records • Personal health records	• Patients: continuity of care; tailored and integrated care; access to own medical history and health data. • Health care system: efficiency in care coordination and integration; efficiency in data management; more appropriate diagnosis and treatments; availability of patient's medical history.	R [48,49,53]	L [15,54]
	• ICT tools enabling communication between health professionals • E-referral systems	• Patients: continuity of care; tailored and integrated care. • Health care system: efficiency in care coordination and integration.	L [55]	L [56]
Health Data Analytics	• Decision support systems	• Patients: tailored care. • Health care system: appropriateness of care; efficiency in clinical decision-making.	R [53,57]	L [58,59]
	• Risk stratification systems	• Patients: tailored care. • Health care system: appropriateness of care; continuous monitoring and collection of health data; identification of risk profiles and tailored intervention strategies; reduced inappropriate access to services.	L [60,61]	L [60,61]

help with collecting, storing and reporting such data to professionals, and to patients via EHRs and PHRs. eHealth tools can also improve communication between these actors through systems for message and audio-visual communication. The benefits of data management and ICT-based communication between professionals are visible in the Strategy for Chronic Care in the Valencia Region (Spain) (Box 5) [61].

• ***Enabling self-management:*** supporting people with multimorbidity living at home includes instruments that educate and empower them in self-care. Self-management tools can provide feedback and support

patients to check their coping behaviours and adherence to treatment, as for example in the POTKU project in Finland, which implements, among other things, self-assessment and self-care instruments [63].

• ***Supporting decision-making by clinicians:*** advanced information systems can be of help both for health professionals and patients. DSSs can link available clinical evidence on appropriate treatments and best practice for the complex profile of people with multimorbidity, improving the quality of care provided. An example of this is the INCA programme in the Netherlands (Box 6) [64].

Box 4: TeleRehabilitation (Nicosia General Hospital, Cyprus)

The TeleRehabilitation programme is a home-based rehabilitation service that applies advanced telemedicine to intensive care unit (ICU) patients after discharge from hospital. These patients usually have multiple chronic conditions and need cardio-respiratory rehabilitation after discharge. However, due to several barriers, very few manage strict adherence to a rehabilitation plan. These barriers include: insufficient infrastructure and rehabilitation centres; limitations in mobility and dependency on carers to accompany them; and financial issues for people in rural areas related to the long travel distances to rehabilitation centres. The TeleRehabilitation programme provides a 'tower kiosk' to each patient. This tower is installed at the patient's home and enables audio-video interaction with a physiotherapist in another location. From a central station at the hospital, the physiotherapist can monitor around six patients in different locations doing exercises simultaneously. Moreover, the patients have wearable devices that also allow the therapist to monitor vital signs. The programme improves adherence to rehabilitation and the health of patients, thus reducing readmissions to the ICU. It is reported to be cost-effective and to lead to high satisfaction among both users and health professionals.

Box 5: Chronic Care Strategy (Valencia Region, Spain)

The Chronic Care Strategy is a policy programme developed in the Valencia Region (Spain), which focuses on people with chronic conditions. The overall goal is to develop an integrated care model for patients with chronic diseases and multimorbidity in need of very complex care. This framework includes, among other things:

- the organization of long-term care using a model of nurse case managers working both in the community and in hospitals, who are in charge of monitoring and supporting patients and mobilizing primary or specialized resources according to their needs;

- the implementation and use of EHRs and electronic patient identifiers by all actors in the care network (doctors, nurses, specialists, pharmacists, etc.), which assures continuity of care and the sharing of health data and medical history among all health professionals involved;

- an information system for stratifying the population according to patient morbidity profiles, with early proactive intervention for their corresponding risk, which allows the continuous monitoring of people in need or at risk of complications;

- an information system to monitor drug therapies and consumption by patients with polypharmacy, which allows doctors and nurses to revise inappropriate therapies and limit inappropriate drug use.

- **Enabling monitoring, risk analysis and proactive intervention:** other types of information systems are aimed at analysing population characteristics and the prevalence of people with multimorbidity. A risk stratification system can monitor and predict health risks of a population, as well as indicating recommended strategies for prevention, monitoring and treatment. The Valencia Region in Spain made big steps forward in this under the Strategy for Chronic Care (Box 5) [61].

Policies for eHealth solutions for multimorbidity care

The potential of eHealth for multimorbidity care has not yet been realized in a systematic and explicit way by current policies. At the EU level, the issues of chronic care, multimorbidity, personalized health care and intelligent environments within the eHealth sector only became a policy priority with the eHealth Action Plan 2012–2020 [5] – together with other longstanding, more general, eHealth issues, such as EHR interoperability and cross-border exchange, legal frameworks, research funding, market conditions and digital health literacy. Concrete actions that go beyond broad policy goals to address the particularities of multimorbidity are still missing.

Since the 2000s, the attention of the EU has been mainly focused on stimulating the general development and implementation of EHRs and health information networks for enabling and improving health data exchange between different care providers and nations. This was the case with the regulatory frameworks within Communication (2008)3282 by the European Commission [65] and the cross-border Directive 2011/24/EU [66], as well as successive initiatives aimed at guaranteeing health data exchanges and interoperability between health information systems within and across EU Member States. The eHealth Network was established under Directive 2011/24/EU as a voluntary network of national authorities responsible for eHealth. It collected the results of different European initiatives and projects and moved forward with the eHealth Interoperability Framework study [67] and the eHealth Digital Service Infrastructure (eHDSI) [68] – linked to the Connecting Europe Facility (CEF) – for the deployment of services for patient summary [69] and ePrescription [70], in order to enable Cross Border eHealth Information Services (CBeHIS).

Policy developments in other areas of eHealth at the EU level concerned the production of recommendations on telemedicine through the European Commission – via Communication (2008)689 [71] – and on key implementation aspects through the eHealth Governance Initiative (eHGI) [72]. mHealth was also discussed in a Green Paper in 2014 [73,74], which tried to distinguish mHealth applications for lifestyle and wellbeing from those assimilated into medical devices under Directive 93/42/EEC [75] or in vitro diagnostic medical devices under Directive 98/79/EC [76], which have different safety and performance requirements. The legislative framework is still ambiguous in this respect and a working group was appointed for preparing mHealth assessment guidelines for the validity and reliability of these applications [77].

Other EU initiatives have addressed the eHealth sector more broadly through policy and research priorities. The eEurope 2002 and 2005 Action Plans [78,79] and the first specific eHealth Action Plan 2004–2011 [80], developed by the European Commission, focused mainly on fostering the European Health Insurance Card, the compatibility of EHRs within countries, the creation of adequate legal frameworks, the extension of health information networks and online services for patients. Such priorities were partly consistent with the general framework of the i2010 initiative [81], which aimed to foster an ICT single market, stimulate research and innovation, and ensure benefits for all citizens in Europe. More recently, the public–private networking operated under the European Innovation Partnership for Active and Healthy Ageing (EIPAHA) [82] led to some mid-

Box 6: INCA programme (Netherlands)

The INCA programme is focused on integrated care for patients with diabetes mellitus type 2 (DM2), cardiovascular risk management (CVRM) and chronic obstructive pulmonary disease (COPD), particularly in primary care settings. Developed within a pilot project, the INCA model enables shared clinical decision-making for preparing tailored care plans, in accordance with Dutch care standards, by adopting a holistic perspective. The programme uses care standards and protocols that address patients' complex needs and takes into account lifestyles, medical interventions and psychosocial profiles. For each patient, an individual care plan is developed by health professionals and the patient together, also based on their risk profile, using stepped care modules. This profile and related information, including complete EHRs, are registered in a 'personal datastore' accessible by both professionals and the patient in a dedicated online application (Patient Health Issue Web). Professionals also use a dedicated mHealth application for supporting information retrieval, sharing and clinical decision-making.

term objectives in the areas of ICTs for integrated care [83] and independent living [84,85], and stressed the importance of eHealth solutions for public health purposes.

EU policies in the field are limited by the fact that health care systems are regulated by national legislations and there is little space for input from European institutions, although some joint initiatives and international bodies have been pushing for more harmonized systems in eHealth, including the WHO [86–88] and the Organisation for Economic Co-operation and Development (OECD) [89]. At national level, there is evidence of increasing interest from policy-makers in dedicating attention to eHealth in general. A survey conducted by the WHO Regional Office for Europe [16] reported that 30 European countries out of the 47 surveyed have adopted a national eHealth policy or strategy, while 31 had made available dedicated financial support for its implementation. Apart from the development of national EHR systems as a widely recognized pillar in the health care sector, telehealth and mHealth had also been considered in dedicated national policies or within the broader national health plans in 29 and 17 countries respectively.

Although it is important to have eHealth present in national policy discourse, such regulative policies had a mixed impact at an operational level, with gaps in implementation. There is a risk that, in some cases, policies were just symbolic and aimed to comply with current international policy trends, but with marginal effects in terms of actual design, development and operationalization of eHealth services for the whole population. This is sustained by the barriers identified by WHO Europe [16]. National governments mentioned relevant challenges concerning the justification of significant expenditure on telehealth from the public budget and measuring the return on investment, which is often not clear or demonstrable. Furthermore, consistent with other analyses [14,24,29,30,32–34,41,72,73,82,90,91], findings from the ICARE4EU project stressed that the barriers to improving implementation of eHealth tools perceived by programme managers generally concern: the lack of proper legal policies and guidelines, perceived high costs, low familiarity with ICTs among both patients and care professionals, and lack of standards. Systematic

evaluation, especially in terms of the cost–effectiveness of the eHealth programmes, is also lacking and constitutes a gap for monitoring the performance, assessing the impact and reshaping ICT-based services in health care in general. A high degree of fragmentation in ICT infrastructures, combined with large disparities in socioeconomic development within and between countries, can lead to social and health inequalities in access to health care services.

The EU and national policy-makers have continued an ambiguous process of goal-setting, specifically on eHealth for multimorbidity. This means that, despite recognizing the important challenges posed by increased numbers of people with complex care needs, policy-makers have not been successful in comprehensively defining eHealth for multimorbidity care and in offering a clear vision to patients, the health workforce and market players, i.e. a vision for how eHealth could play a pivotal role through the wide variety of ICT tools that can be exploited. There is a lack of systematic incentives and reimbursement measures for people with multimorbidity to use eHealth solutions [3] which, together with uncertain legal and privacy frameworks for the status of some technologies, has a negative impact on the availability of products and services on the market. Producers are often small and medium-sized enterprises (SMEs) with limited production capacity, their own technology standards and low financial capacity. In order to sustain this market, it is necessary to incentivize both demand and supply, as well as to make the adoption of eHealth solutions in the public health care sector easier [24,28,29,32,33,48,49,90].

A summary of the main EU and national policies in the field of eHealth, their impact on multimorbidity care, as well as the gaps, is provided in Table 4, which is structured according to the Lowi typology of policies [92], distinguishing between them as distributive, constituent, regulative and redistributive. The main EU funding instruments for research and innovation in the field of eHealth are described in Box 7.

Box 7: EU funding for research and innovation on eHealth

The European Commission started investing in health informatics in 1988 with the Advanced Informatics in Medicine (AIM) Programme. Over the following 25 years, more than 500 research and development projects in the field of eHealth were funded, with an overall budget of €1 billion, excluding the specific funding for medical and biomedical technologies [93]. So far, EU funding instruments have been used to support hundreds of pilots and small to medium-scale eHealth projects, which have often shown the difficulty or impossibility of proper entry into the market, contributing to what has been called the 'plague of pilots' [94]. The main sources of funding for research and innovation at EU level are currently [95]: the Horizon 2020 Programme; the Active and Assisted Living (AAL) (formerly Ambient Assisted Living) Joint Programme; the Health Programme 2014–2020 (formerly Public Health Programme); the Small and Medium-sized Enterprise (SME) Instrument; and the European Structural and Investment Funds. Previously, the main funding instruments were the Seventh Framework Programme 2007–2013 and the Competitiveness and Innovation Framework Programme (CIP).

Table 4: Current policies on eHealth at EU and national levels and related gaps

Distributive policy	Constituent policy
EU level	*EU level*
• EU has no competence on national health care systems and services	• Establishment of institutional agencies, networks and working groups, with the aim of setting priorities, providing guidelines and improving connections between actors: eHealth Network, eHGI, EIPAHA
National level	
• Provision of some eHealth services by public (and private) care providers, mainly: EHRs, ePrescriptions, telehealth, mHealth	*National level*
	• National authorities or offices on eHealth are gradually being established
Gaps	
• Only EHRs and some telehealth services are relatively well-established	*Gaps*
• Implementation of other eHealth tools is scarce and fragmented	• The main focus of current actions is still on EHRs and ePrescriptions and their interoperability within and between countries
Regulative policy	**Redistributive policy**
EU level	*EU level*
• EHRs and telemedicine were object of specific Directives or Communications providing a general legal framework	• Funding instruments for research and innovation projects on eHealth are offered
• mHealth applications are currently debated for better understanding their legal status	*National level*
	• Some funding for eHealth solutions is usually available in national health care systems
National level	
• Many countries have adopted specific eHealth policies or included it within the national health plan	*Gaps*
	• Research and innovation funding risk sustaining only small-scale projects with limited scope and low chances of entering the market
Gaps	
• Regulations are focused mainly on EHRs and the cross-border transmission of health data	• Funding at national level is usually perceived to be insufficient for covering the high investment costs in the field
• The legal status of mHealth applications and other solutions is not yet clarified	

Discussion

This Policy Brief has summarized the available evidence on the current implementation, effects and policies related to eHealth solutions for multimorbidity care in Europe. Despite some gaps in the available evidence, and the limitations of this analysis, the findings indicate that eHealth solutions can significantly improve health conditions and quality of life for people with multimorbidity through increased integration, personalization, quality and accessibility of care. However, the challenge of multimorbidity requires even greater efforts to establish comprehensive systems based on patient-centredness and integrated care for complex cases. eHealth development in the EU is fragmented, both within and between countries, because of intrinsic gaps in infrastructure, health care systems and socioeconomic context. Despite this, European countries have made steps

towards implementing some eHealth solutions (mostly EHRs, some telehealth services and mHealth applications). However, this still seems insufficient to guarantee people with multimorbidity adequate access to the full potential of eHealth solutions available [16,29,30,32–34,96]. Also, a limited number of studies and policies have addressed people with multiple chronic conditions, because the disease-oriented approach still influences clinical research and health care organization [12].

Limitations

There are very few studies and data available on the specific issue of eHealth for multimorbidity care and their limited sample sizes greatly reduce the generalizability of the results, a constraint which affects all eHealth programmes more broadly.

The ICARE4EU project did not aim to carry out a systematic mapping of good practices of integrated care for people with multimorbidity all over Europe. Instead, via country experts appointed by the consortium, a large number of programmes was identified and screened, and initiatives were included in the dataset if they fitted the agreed selection criteria (see Appendix 2). This process provided a good insight into current practice in the field, but it cannot be considered to be representative as such. For the specific issue of eHealth, data collection instruments included the most frequently encountered types of eHealth solutions, but without focusing on all potential solutions applicable to the field, which would have required a completely different and specific data collection process beyond the scope of the project.

Policy implications

To stimulate European health care systems to move forward in the improvement of care for people with multimorbidity through eHealth tools, a joint collaboration by EU and national policy-makers for addressing the issues is needed in order to:

• refine and implement a concrete road map for achieving compatibility and standardization of EHRs, e-referrals, ePrescriptions and health information systems, within and between EU Member States, following the indications and recommendations emerging from current activities in the field [67,68]. This is a necessary step for making the medical history of patients with multimorbidity available to different care providers, overcoming the disease-oriented organization of services and facilitating integrated and patient-centred care

• foster personalized medical services through enhanced EHRs and eIDs, which can enable PHRs for use by patients themselves. This represents an opportunity for further empowering people with the information necessary for self-managing and monitoring their own health and care

• identify key public health priorities for people with multimorbidity nationally and support the scaling up of remote consultation, monitoring and care services. Policy-makers should guarantee equal access to health care

services for universal health coverage in accordance with the concrete needs of the population, by also exploiting telehealth, telemonitoring and telecare services

- define common public health objectives across EU Member States for different profiles of people with complex care needs and regulate jointly on the interoperability and requirements of eHealth solutions for remote consultation, monitoring and care. The standardization of EHRs, which has already been initiated, should be further widened to embrace other eHealth technologies, at least those for remote services (telehealth, telemonitoring and telecare) and self-management in the first instance. This would lead to better integration of eHealth services in the EU and to new market opportunities for technology producers (a single EU eHealth market would be more attractive)

- foster the awareness, standardization and adoption of DSSs by care providers at national level. Through such software for health data analytics, clinical decision-making for people with multimorbidity could be made more effective by helping to identifying the best treatment options

- promote the awareness, standardization and adoption of information systems for analysing the risk stratification of regional and national populations. The wide implementation of these tools would enable the identification of people with complex health needs who are at high risk. On this basis, monitoring and proactive strategies could be implemented, such as periodic health checks and health promotion interventions, to delay the most severe health problems and reduce health care resource use

- plan new promotion campaigns for encouraging patients, informal carers and health professionals to improve their digital health literacy. For people with multimorbidity, the current low level of digital skills constitutes a barrier to using eHealth tools. Also, in the health workforce, digital skills are usually low and this can increase a negative attitude towards changing traditional care practices and adopting eHealth tools: the inclusion of compulsory eHealth modules in education and training would be beneficial for students in health and caring sciences, and professionals in the health care sector

- allocate dedicated research and development funds and also design new regulations in the field of mHealth solutions in order to deepen understanding of the opportunities and risks they offer. The fast development and wide availability of smartphones, mobile and wearable devices, able to collect and transmit health data, present a rising opportunity for access to services by, and self-management of, people with multimorbidity, but also bring risks in terms of service adequacy and privacy protection. Since mHealth solutions do not yet have a clear legal status, and there is not enough evidence on their impact, policy-makers at EU and national levels should consider focusing on these issues by following and strengthening the current consultation process [73,77]

- privilege the allocation of research funding to large-scale studies and trials aimed at verifying the effectiveness, efficiency and impact of eHealth solutions for people with multimorbidity. Given the current fragmentation of EU and national funds in many small-scale projects, which rarely produce high-level evidence or properly enter the market, it is necessary to dedicate some funding to large studies.

Conclusions

Demographic changes and the increasing incidence of chronic diseases continue to raise the issue of how to appropriately meet the complex care needs of people with multimorbidity. The need for an evolution of the policies to address multimorbidity has been recently recognized at EU level [97] but the role of eHealth for this target group was not clarified. Although health care systems are still primarily a responsibility of individual Member States, EU policy-makers still have instruments to promote and facilitate the adoption of eHealth solutions by care service, for instance, by achieving shared common public health goals, with common practices, guidelines and standards to be developed and applied among Member States [98]. The sharing of successful experiences and good practices in this field is also required, not only to facilitate transferring eHealth solutions to different contexts and countries, but also for building and adapting new services on the available eHealth infrastructure.

People with multimorbidity have complex needs, which cannot be addressed by health care services alone. Greater integration between health and social care is needed to target, plan and deliver comprehensive services [99]. Investing in eHealth solutions can: reinforce the connection between health and social care (beyond the silos often present in local contexts); sustain the social inclusion of patients; and overcome the barriers to access faced by vulnerable groups with cumulative health and social disadvantages.

eHealth for multimorbidity care is also an area that intersects with other social and economic issues currently debated in Europe, including the provision of multilingual and culturally sensitive care services using ICT [16], the attraction of new investments for the digitalization of health care and the creation of a better qualified workforce able to work with eHealth tools [100], and the contribution of cost-effective ICT and eHealth solutions for the sustainability and quality improvement of long-term care systems [91].

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Appendix 1

Rapid review of the literature

For this policy brief we used data from various sources. First, we identified European and national policy and strategy documents on the adoption of eHealth or ICTs for multimorbidity care or chronic care provided by the participating country experts and via a targeted search on the websites of the European Union, the World Health Organization and other international bodies. Second, we searched for relevant scientific publications in PubMed and Google Scholar. The literature identified was integrated with other available relevant references and grey literature (e.g. reports, project deliverables) retrieved from the selected papers, policy documents and institutional websites. Keywords for searching included combinations of 'multimorbidity' and/or 'chronic care' with different technologies (and various occurrences): eHealth (e-health); information and communication technology (ICT); health information system; electronic health record (EHR); medical health record (EMR); personal health record (PHR); electronic patient record (EPR); on-line (online); internet; web; assistive technology (AT); assistive device; wearable device; active and assisted living (AAL); ambient assisted living; mobile health (mHealth); ePrescription (e-prescription); e-referral; smart home; domotics; sensors; telehealth; telemedicine; telecare; telehomehealth; telemonitoring; electronic communication; decision support system (DSS); risk stratification; health analytics; big data. We privileged results from reviews and meta-analyses over small-scale or limited interventions, where possible.

Appendix 2

Selection of innovative approaches to integrated care for people with multimorbidity in European countries in the ICARE4EU project

The ICARE4EU project aims to identify, describe and analyse innovative integrated care practices for people with multimorbidity in European countries. Subsequently, it aims 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. In 2014, data on innovative care approaches at a national, regional or local level were collected via country experts in 31 European countries. These country experts were asked to search for and report on all integrated care programmes that focus on multimorbidity within a specific country. The term 'programmes' refers to initiatives that (aim to) put integrated care for people with multimorbidity into practice. Initially, 178 programmes were identified by the country experts. Based on predetermined selection criteria, the ICARE4EU project partners considered 101 ongoing programmes, in 24 countries, to be eligible for inclusion in the database. Via the country experts, English-language questionnaires were distributed to managers of the 101 selected innovative multimorbidity programmes to collect detailed programme characteristics.

Next, these 101 programmes were evaluated by the project team, based on quantitative and qualitative criteria. Each programme was scored in five dimensions: 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) innovativeness in financing mechanisms for integrated care services. These aspects had been selected by the project team as different study perspectives on multimorbidity care. Based on these scores, members of the project team built a longlist of 25 programmes that had high scores. The second evaluation of these 25 programmes was based on the available descriptive information gathered via the survey (e.g. the description of the aims of the programme, reported strengths and weaknesses) and any published evaluation reports. This resulted in a shortlist of so-called 'high potential' programmes. To decide whether or not to select a programme from 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. The eight programmes visited were operational in Belgium, Bulgaria, Cyprus, Denmark, Germany, Finland, the Netherlands and Spain. The results of these visits are described in eight case reports published on the ICARE4EU website (www.icare4eu.org).

Selection criteria

Programmes were considered for inclusion in the ICARE4EU project if they met the following criteria:

- 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 cooperation between at least two services (these services may be: part of the same organization, for example, services within a hospital; or part of different organizations, for example, between medical care and social care);

- have some formal status/formalized cooperation (any form);

- will be or have been evaluated;

- are currently running (2014), or finished less than 24 months ago, or start within the next 12 months.

ICARE4EU Policy Briefs

22. *How to strengthen patient-centredness in caring for people with multimorbidity in Europe?* Iris van der Heide, Sanne P Snoeijs, Wienke GW Boerma, François GW Schellevis, Mieke P Rijken. On behalf of the ICARE4EU consortium

23. *How to improve care for people with multimorbidity in Europe?* Mieke Rijken, Verena Struckmann, Iris van der Heide, Anneli Hujala, Francesco Barbabella, Ewout van Ginneken, François Schellevis. On behalf of the ICARE4EU consortium

24. *How to strengthen financing mechanisms to promote care for people with multimorbidity in Europe?* Verena Struckmann, Wilm Quentin, Reinhard Busse, Ewout van Ginneken. On behalf of the ICARE4EU consortium

25. *How can eHealth improve care for people with multimorbidity in Europe?* Francesco Barbabella, Maria Gabriella Melchiorre, Sabrina Quattrini, Roberta Papa, Giovanni Lamura. On behalf of the ICARE4EU consortium

26. *How to support integration to promote care for people with multimorbidity in Europe?* Anneli Hujala, Helena Taskinen, Sari Rissanen. On behalf of the ICARE4EU consortium

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