Multimorbidität – eine Herausforderung für europäische Gesundheitssysteme

Eine Analyse integrierter Versorgung als Lösungsansatz

vorgelegt von

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6	Jonathan Stokes*, Verena Struckmann*, Søren Rud Kristensen, Sabine Fuchs, Ewout van Ginneken, Apostolos Tsiachristas, Maureen Rutten-van Mölken, Matt Sutton. *shared first authorship. *Towards incentivising integration: A typology of payments for integrated care. Health Policy 2018, 122: 963- 969.*	Verlagsversion	175-199	*doi: 10.1016/j.healthpol.2018.07.003*	Creative Commons BY-NC-ND 4.0

Zusammenfassung

Europas Gesundheitssysteme stehen, wie weltweit viele andere ebenfalls, vor der Herausforderung, dass zunehmend mehr Menschen von Multimorbidität betroffen sind. Multimorbidität wird häufig definiert als zwei oder mehrere chronische Erkrankungen, die gleichzeitig bei einer Person auftreten. Europäische Gesundheitssysteme sind zurzeit häufig fragmentiert und überwiegend auf die Verbesserung klinischer Ergebnisse ausgerichtet, dies wird den Bedürfnissen multimorbider Personen oftmals nicht gerecht. Die integrierte Versorgung wird zunehmend als vielversprechendes Konzept für die Neugestaltung der Versorgung für chronisch Kranke, insbesondere bei Multimorbidität, beschrieben. Daher werden derzeit in vielen europäischen Ländern integrierte Versorgungsprogramme entwickelt und implementiert, obwohl der Nachweis deren Wirksamkeit nach wie vor begrenzt ist.

In dieser Arbeit wurden bereits implementierte integrierte Versorgungsprogramme untersucht, um innovative Ansätze, Elemente und vorhandene Lücken aufzuzeigen und gleichzeitig Empfehlungen für die weitere systematische Beschreibung, Analyse sowie Finanzierung zu formulieren. Die Arbeit basiert auf länderübergreifenden Vergleichen und kombiniert systematische Literatur- und Dokumentanalysen mit qualitativen Interviews.

Folgende Elemente wurden identifiziert, die, insbesondere in Kombination, zur Umsetzung integrierter Versorgung beitragen konnten: die Schaffung neuer Kooperationspartnerschaften; die Neudefinition von Rollen und Verantwortlichkeiten; die Schaffung neuer beruflicher Rollen sowie ein unterstützender Führungsstil; klar geregelte Verantwortlichkeiten; Koordination der Versorgung; eine gute Kommunikation und ein Paradigmenwechsel hin zu einem personenorientierten Ansatz. Es konnte gezeigt werden, dass bisher eine Grundlage für eine systematische und standardisierte Beschreibung, Entwicklung und Evaluation von integrierten Versorgungsprogrammen für Multimorbide fehlt. Daher wurde diese Grundlage in der vorliegenden Arbeit in Form eines Frameworks entwickelt. Ebenso deuten die Ergebnisse daraufhin, dass trotz der Diskurse über die Bedeutung neuer Vergütungsmechanismen für die Umsetzung der integrierten Versorgung bislang vergleichsweise wenig konkrete Maßnahmen in der Praxis vorliegen.

Weitere Forschung bezüglich der Auswirkungen unterschiedlicher finanzieller Anreize auf das Verhalten von Leistungserbringern gegenüber multimorbiden Menschen ist daher dringend erforderlich. Für einige Länder bedeutet dies auch, sich zunächst auf die Weiterentwicklung der derzeitigen Vergütungsansätze zu konzentrieren, bevor komplexere Vergütungsmodelle, wie sog. „bundled payments", eingeführt werden. Um systemimmanente Hürden zu überwinden und künftige Investitionen und Analysen in der integrierten Versorgung zu erleichtern, ist ebenfalls eine stärkere Berücksichtigung der Evaluation durch gesetzgeberische Maßnahmen erforderlich.

Abstract

Europe's health systems, like many others worldwide, face the challenge of an increasing number of people being affected by multimorbidity. Multimorbidity is often defined as two or more chronic diseases occurring simultaneously in one person. At present, health systems in Europe are often fragmented and predominantly focused on improving clinical outcomes, which does not meet the needs of multimorbid individuals. Integrated care is increasingly being described as a promising concept for redesigning care for the chronically ill, particularly in cases of multimorbidity.

As a result, innovative integrated care programmes are currently being developed and implemented in many European countries, although evidence of their effectiveness remains limited. Therefore, integrated care programmes that have already been implemented have been examined in this work to identify innovative approaches, elements and existing gaps and at the same time to formulate recommendations for further systematic description, analysis and financing. The work is based on cross-national comparisons and combines systematic literature and document analyses with qualitative interviews.

The following elements were identified which, especially in combination, could contribute to the implementation of integrated care: the creation of new collaborative partnerships, the redefinition of roles and responsibilities, the creation of new professional roles, as well as a supportive management approach that promotes networking and division of labour cooperation, clearly defined responsibilities, coordination of care, good communication and a paradigm shift towards a person-oriented approach. It has been shown that so far there is no basis for a systematic and standardised description, development and evaluation of integrated care programmes for multimorbid persons, thus this basis was developed in the form of a framework in the present work. The results also point to the fact that, despite the discourses on the importance of new remuneration mechanisms for the implementation of integrated care, there are comparatively few concrete measures in practice to date.

Further research on the impact of different financial incentives on the behaviour of providers towards multimorbid persons is therefore urgently needed. For some countries, it also means concentrating first on further developing their current remuneration approaches before introducing more complex ones, such as bundled payments or population-based remuneration models. In order to overcome systemic hurdles and facilitate future investment and analysis in integrated care, greater consideration must also be given to evaluation through legislative measures.

Inhaltsverzeichnis

Abkürzungsverzeichnis

ACT	Advanced Care Coordination and TeleHealth Deployment
BE	Belgium
BG	Bulgaria
BPCI	Medicare Bundled Payments for Care Improvement
CCM	Chronic Care Model
CH	Switzerland
CMP	Clinic for multimorbidity and polypharmacy
CMSHCC	Center for Medicare and Medicaid Services Hierarchical Condition Categories
COPD	Chronic obstructive pulmonary disease
CVD	Cardiovascular diseases
CY	Cyprus
DALY	Disability-adjusted life years
DCNPO	'Diabetic Care' non profit organization
DE	Germany
DK	Denmark
DMP	Disease Management Programme
DRG	Diagnostic Related Groups
DSS	Decision Support System
eHealth	Electronic Health
EHR	Electronic Health Records
EIP AHA	European Innovation Partnership on Active and Healthy Ageing
EMR	Electronic Medical Record
EU	European Union / Europäische Union
ES	Spain
FFS	Fee-for-Service
FI	Finland
GCM	Guided Care Model
GK	Gesundes Kinzigtal
GP	General Practitioner
HCP	Health and care plan
ICARE4EU	Innovating care for people with multiple chronic conditions in Europe
ICD	International Statistical Classification of Diseases and Related Health Problems
ICT	Information and Communication Technology
ICU	Intensive Care Unit
INCA	Integrated care model
JA-CHRODIS	Joint Action on Chronic Diseases
NGO	Non-governmental Organization
NHIF	National Health Insurance Fund
NICE	National Institute for Health and Care Excellence
NL	The Netherlands
NPO	Non-profit Organization
P4C	Pay-for-Coordination
P4P	Pay-for-Performance
POTKU	Potilas kuljettajan paikalle (Putting the Patient in the Driver's Seat)
RCT	Randomised Controlled Trial
SELFIE	Sustainable Integrated Chronic Care Models for Multi-morbidity: Delivery, Financing and Performance
UK	United Kingdom
USA	United States of America
WHO	World Health Organization

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Kapitel 1

Einleitung

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1.1 Chronische Erkrankungen und Multimorbidität

Europas Gesundheitssysteme stehen heute vor vergleichbaren gesundheitspolitischen Herausforderungen. So bedingt die demografische Entwicklung, gekennzeichnet durch einen zunehmenden Alterungsprozess, fast in der gesamten europäischen Region eine Zunahme chronischer Erkrankungen. Chronische Gesundheitsprobleme und Krankheiten sind für 86% aller vorzeitigen Todesfälle verantwortlich und damit die führende Ursache von Mortalität und Morbidität in allen Staaten der EU – mit voraussichtlich steigender Tendenz [1, 2].

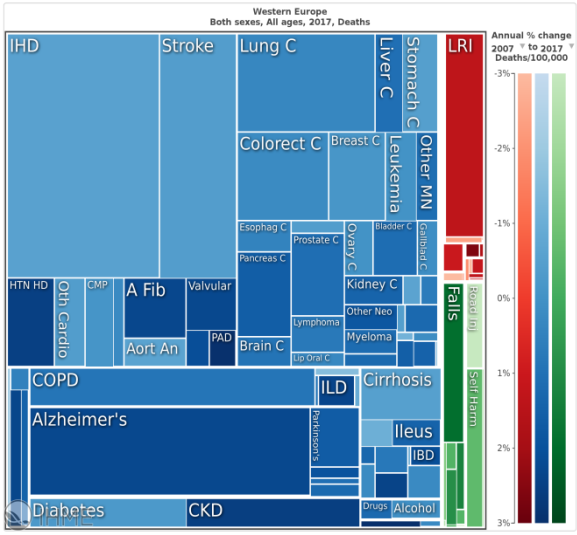

Abbildung 1.1: Todesfälle nach Krankheitsgruppen

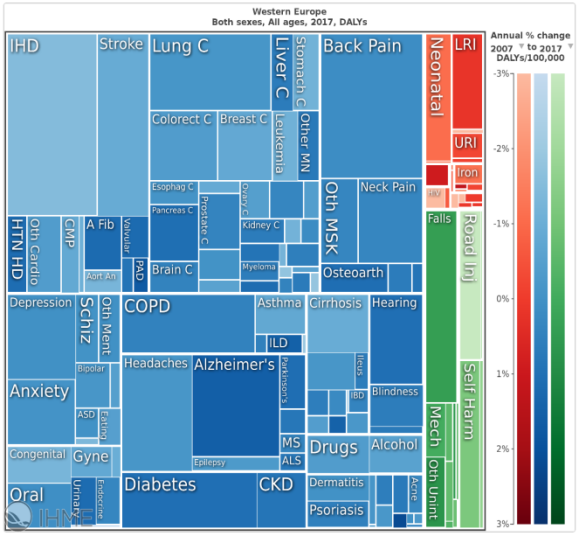

Abbildung 1.2: DALYs nach Krankheitsgruppen

Quelle: Institute for Health Metrics and Evaluation (IHME), 2018

Wie den Abbildungen 1.1 und 1.2 zu entnehmen ist, sind die nicht-übertragbaren Krankheiten (in blau) die Ursache für den größten Anteil an Todesfällen und Disability-adjusted life years (DALYs). Bei den Todesfällen dominieren die ischämischen Herzkrankheiten mit 15,9%, gefolgt von der Alzheimer-Krankheit und anderen Demenzerkrankungen (10,6%) sowie Schlaganfällen (7,9%). Bei den DALYs dominiert ebenfalls die Krankheitsgruppe der ischämischen Herzkrankheiten mit (7%), gefolgt von Schmerzen des unteren Rückens (6,4%) [3]. Aufgrund der Zunahme chronischer Erkrankungen ist eine Umstrukturierung der bisherigen Abläufe und eine Anpassung von gesundheitspolitischen Rahmenbedingungen eine dringend erforderliche Aufgabe für europäische Gesundheitssysteme [4, 1, 5, 6].

Immer häufiger kommt es zu Multimorbidität, dem gleichzeitigen Vorhandensein von zwei oder mehreren chronischen Erkrankungen bei einer Person [7, 8]. Allein in Europa wird geschätzt, dass etwa 50 Millionen Personen an Multimorbidität leiden, eine Zahl, die mit einer immer älter werdenden Bevölkerung weiter ansteigen wird [9]. Obwohl Multimorbidität die

Gesundheitsversorgung vor zusätzliche medizinische und gesundheitsökonomische Herausforderungen stellt, was sich beispielsweise in der erhöhten Leistungsinanspruchnahme oder in der Schaffung adäquater Versorgungsstrukturen widerspiegelt, hat diese Thematik lange Zeit verhältnismäßig wenig Beachtung erhalten [10, 11, 12, 8, 13, 14, 15]. Vor allem in den letzten Jahren ist in den Industrieländern ein wachsendes Interesse an dem Thema Multimorbidität zu beobachten [16, 17].

Die Versorgung chronisch Kranker bildet bereits seit Jahren eine große Herausforderung für europäische Gesundheitssysteme. Die Auswirkungen von Multimorbidität jedoch sind vielfältiger, sowohl für die Betroffenen als auch für die behandelnden Ärztinnen und Ärzte sowie für die anderen Leistungserbringer*innen und letztlich für das gesamte Gesundheitssystem. Darüber hinaus geht Multimorbidität für die betroffenen Personen häufig mit einer geringeren Lebensqualität oder einer vorzeitigen Mortalität einher und ist mit einem höheren Versorgungsbedarf verbunden, wie beispielsweise einer größeren Wahrscheinlichkeit, in ein Krankenhaus aufgenommen zu werden oder einer steigenden Zahl von Arztkontakten [18, 19, 20, 21]. Neben der Zunahme der Morbiditätsbelastung und der damit einhergehenden Komplexitätszunahme der Gesundheitsprobleme sind multimorbide Personen von längerem und häufigerem Arbeitsausfall betroffen, ebenso einem früheren Austritt aus der Erwerbstätigkeit [19, 20, 21, 22, 23]. Der Versorgungsbedarf multimorbider Personen unterscheidet sich demnach in vielen Aspekten von der Versorgung akut oder ‚singulär' chronisch erkrankter Personen [24, 7, 25]. Aufgrund der notwendigen Inanspruchnahme von verschiedenen Leistungserbringern (verschiedener Fachdisziplinen) leiden sie häufiger unter fragmentierter Versorgung, Unangemessenheit existierender Leitlinien, Koordinationsproblemen, unerwünschte Arzneimittelinteraktionen, Polypharmazie und sich widersprechenden Therapieempfehlungen [12, 26, 14, 27, 28, 29]. Außerdem weisen multimorbide Personen insgesamt eine höhere Inanspruchnahme von Gesundheitsleistungen auf und ihre Kapazität mit den Belastungen der Behandlungen der unterschiedlichen Erkrankungen umzugehen ist geringer [30].

Ebenso wie bei der Behandlung singulär chronisch Kranker sollten auch bei multimorbiden Personen die Präferenzen, Bedürfnisse und Werte der Betroffenen berücksichtigt werden, damit ein personenzentriertes und erfolgreiches Krankheitsmanagement erreicht werden kann [10, 31, 32]. Während bei einer chronischen Erkrankung für gewöhnlich ein Arzt/eine Ärztin für die Behandlung verantwortlich ist, so ist bei der Versorgung mehrfach chronisch Kranker die Zusammenarbeit zwischen den verschiedenen behandelnden Ärzt*innen und anderen Gesundheitsberufen essentiell. Besonders wichtig bei multimorbiden Personen ist die Zusammenarbeit der verschiedenen Leistungserbringer. Zurzeit sind die Gesundheitssysteme in Europa allerdings häufig fragmentiert und

überwiegend auf die Verbesserung klinischer Ergebnisse ausgerichtet, was oftmals nicht dem Bedarf multimorbider Personen entspricht [33, 34]. Den rein krankheitsspezifischen Behandlungsmöglichkeiten fehlt häufig der Nachweis, dass sie bei multimorbiden Personen wirksam sind [35, 36]. Außerdem können klinische Leitlinien, die sich auf das Management einzelner Krankheiten konzentrieren für Menschen mit Multimorbidität inadäquat, irrelevant oder sogar schädlich sein [37, 38]. Des Weiteren können sie zu einer unerwünschten Polypharmazie beitragen und geben keine Hinweise darauf, welche Behandlungsoption Priorität hat [39]. Gesundheitssysteme reagieren bereits auf die Zunahme (singulärer) chronischer Krankheiten, wie beispielsweise Diabetes oder COPD, durch die Einführung von Disease-Management-Programmen (DMP) [40, 41]. Jedoch sind die meisten DMPs nicht darauf ausgerichtet, den unterschiedlichen und noch komplexeren Bedürfnissen von multimorbiden Personen gerecht zu werden, da sie sich auf einzelne chronische Krankheiten konzentrieren [40, 41, 42].

Gesundheitssysteme könnten demnach besser auf die umfassenden Bedürfnisse und Präferenzen von multimorbiden Personen reagieren, wenn eine Anpassung des Versorgungsfokus weg von akuten und singulär chronischen Krankheiten, hin zu einem ganzheitlichen und integrativen Behandlungsansatz, vorgenommen wird [31].

Deswegen ist es notwendig die gesamte Gesundheitsversorgung zu verändern, beispielsweise durch eine verstärkte Kooperation der verschiedenen Leistungserbringer und der vermehrten Arbeit in multidisziplinären Teams, die Förderung des Selbst-Management der Erkrankungen, die Entwicklung eines individuellen Pflegeplans, die Verwendung klinischer Informations- und Kommunikationssysteme und die Einführung neuer beruflicher Rollen [43, 34]. Bei solch einer Neuausrichtung wird die Integrierte Versorgung derzeit als einer der vielversprechendsten Ansätze für eine geeignete Versorgung von Menschen mit multiplen chronischen Erkrankungen angesehen.

1.1.1 Definition Multimorbidität

Bereits bei der Definition von Multimorbidität stößt man an Grenzen, denn bisher existiert keine allgemeingültige, standardisierte und anerkannte Definition. Die Definitionen von Multimorbidität sind weitreichend und unterscheiden sich hinsichtlich der Anzahl, der Art und des Schweregrads der inkludierten Krankheiten [44]. Eine häufig verwendete Definition beschreibt das Auftreten von Multimorbidität als das gleichzeitige Vorhandensein von zwei oder mehreren chronischen Erkrankungen in einer Person [45]. Damit wird Multimorbidität in der Literatur häufig vom Konzept der Komorbidität abgegrenzt, bei dem eine Indexerkrankung im Vordergrund steht [46]. Weitere häufig verwendete Definitionen von Multimorbidität definieren diese als: […] „the co-existence of two or more chronic conditions, where one is not necessarily more central than the others“ oder als:

[…] „people being affected by two or more chronichealth conditions“ [8, 7]. Eine Abgrenzung der Konzepte Multimorbidität und Komorbidität ist vor allem im Hinblick auf die Versorgung der Betroffenen von Bedeutung. Ausgehend von dem Zusammenhang der Erkrankungen, geht das Konzept der Komorbidität einer krankheitsorientierten Behandlung nach. Im Gegensatz dazu wird bei dem Konzept der Multimorbidität zunehmend ein ganzheitlicher Versorgungsansatz angestrebt.

1.1.2 Prävalenz Multimorbidität

Bei der Planung neuer Versorgungsmaßnahmen, wie z.B. der integrierten Versorgung für multimorbide Personen, ist es zuallererst notwendig die Prävalenzdaten von Multimorbidität sowie die damit verbundenen Einflussfaktoren zu untersuchen. Je nach Forschungsvorhaben und verfügbaren Daten können unterschiedliche Messmethoden sinnvoll sein, limitieren damit aber die Möglichkeiten des Vergleichs internationaler Daten zur Prävalenz von Multimorbidität. Ein weiteres Problem stellt die Variation in der Anzahl der jeweils ausgewählten chronischen Erkrankungen dar, die in die Prävalenzberechnungen einbezogen werden. Diese variiert von einigen wenigen (5-10) Krankheiten bis zu mehr als 300 „International Statistical Classification of Diseases and Related Health Problems“ (ICD)-10 Diagnosen. Diese enorme Variation ist auf die unterschiedlichen methodischen Herangehensweisen zurückzuführen [47, 14, 48]. Auch die Art der berücksichtigten Erkrankungen und Datenquellen (z.B. Interview, Patientenakte, Routinedaten) ist sehr heterogen [49, 47, 48].

Darüber hinaus sind europaweite Studien zur Prävalenz von Multimorbidität bisher rar. Eine der wenigen Untersuchungen ist die „Survey of Health, Ageing and Retirement in Europe“ (SHARE Studie), die seit 2002 regelmäßig in 27 europäischen Ländern und Israel durchgeführt wird. Hier wurde innerhalb der fünften Untersuchungswelle bei den über 50-Jährigen in 14 europäischen Ländern eine Prävalenzrate der Multimorbidität (Multimorbidität wurde definiert als das gleichzeitige Vorhandensein von zwei oder mehreren chronischen Erkrankungen) von 31,4% festgestellt [50]. Die Ergebnisse weiterer Studien haben eine steigende Prävalenz von Multimorbidität innerhalb Europas festgestellt, die mit steigendem Alter und niedrigerem sozioökonomischem Status assoziiert wird - trotz der zum Teil stark schwankenden Prävalenzangaben. So wurde in der Gruppe der 65-Jährigen oder Älteren in der Regel eine Prävalenz von 60% festgestellt [51, 11, 12, 52, 47, 53, 54]. Damit wird deutlich, dass Multimorbidität ein gesamteuropäisches Problem ist, das sich mit steigendem Anteil der älteren Bevölkerung in Zukunft verschärfen wird.

1.2 Integrierte Versorgung

Die integrierte Versorgung ist ein Versorgungsansatz, der bisher insbesondere bei chronischen Erkrankungen verstärkt zum Einsatz kommt [55]. Die integrierte Versorgung wird als

vielversprechendes Konzept für die Neugestaltung der Versorgung chronisch Kranker, insbesondere bei Multimorbidität, beschrieben [56, 57, 58, 59, 60]. Es handelt sich dabei um ein innovatives Konzept, welches Anreize setzt, einzelne Versorgungsbereiche enger miteinander zu verknüpfen, die Qualität und Wirtschaftlichkeit zu verbessern sowie Behandlungsabläufe zu optimieren. Laut WHO handelt es sich bei der integrierten Versorgung um ein "*[…] concept bringing together inputs, delivery, management and organization of services related to diagnosis, treatment, care, rehabilitation and health promotion. Integration is a means to improve the services in relation to access, quality, user satisfaction and efficiency*" [57]. Eine allgemeingültige Definition des Begriffes der integrierten Versorgung existiert bisher nicht, da im internationalen Umfeld verschiedene Bezeichnungen und Begriffsbestimmungen verwendet werden [61].

Es existieren verschiedene Bezeichnungen mit denen integrierte Versorgung assoziiert wird, wie beispielsweise shared care (UK), transmural care (NL), managed care (USA, CH) oder comprehensive care und disease management [62, 63, 57]. Alle haben gemein, dass sie mit ähnlichen Elementen arbeiten, um ähnliche Probleme anzugehen, unterscheiden sich jedoch in ihrem Umfang und der Betrachtungsweise. Integrierte Versorgung wird oftmals als Obergriff für die aufgeführten Konzepte (und Weitere) verwendet [64, 65]. Es gibt große Erwartungen in Bezug auf die Ergebnisse, zu denen die integrierte Versorgung beitragen soll, z. B. bestmöglicher Gesundheitsstatus, bessere Gesundheitsversorgung erfahren und höhere Wirtschaftlichkeit - auch bekannt als Triple Aim [63, 66, 67, 68, 69, 70, 71].

Zentrales Kriterium integrierter Versorgung sollte die flexible Zusammenarbeit beteiligter, lokaler Leistungserbringer und Organisationen sein, um so eine schnittstellenübergreifende interdisziplinäre und interorganisationale Versorgung und personenzentrierte Intervention auf verschiedenen Ebenen zu ermöglichen [24, 72].

Integrierte Versorgung ist in der vorliegenden Dissertation als strukturiertes Vorhaben um koordinierte, proaktive, personenzentrierte, multidisziplinäre Versorgung durch zwei oder mehr gut kommunizierende und kooperierende Leistungsanbieter definiert.

Damit steht die integrierte Versorgung im Gegensatz zu gegenwärtig häufig fragmentierten Strukturen und kann als vielversprechender Ansatz für die Versorgung der steigenden Zahl multimorbider Personen und deren zunehmend komplexeren Bedürfnissen gesehen werden [70, 55, 16, 8]. Um eine solche integrierte Versorgung zu realisieren, müssen viele Hürden überwunden werden. Ebenso ist ein Paradigmenwechsel bei der Bereitstellung, Verwaltung und Ausgestaltung des Finanzierungssystems notwendig, weg von einer fragmentierten, hin zu einer koordinierten Versorgung [62, 60].

1.2.1 Theoretische Modelle der Integrierten Versorgung für chronisch Kranke

Innovative und personenzentrierte Ansätze der integrierten Versorgung, die die Bedürfnisse und Ziele einzelner Personen in den Mittelpunkt stellen, basieren häufig auf dem vielfach zitierten Chronic-Care-Modell (CCM) von Wagner et al., welches zur Verbesserung der Versorgungsqualität für (singulär) chronisch Kranke entwickelt wurde (siehe Abb. 1.3) [73, 74, 28]. Ziel des Modells ist es, den zumeist sehr unterschiedlichen Bedürfnissen der Betroffenen gerecht zu werden und diese Personen aktiv in ihre Behandlung einzubinden. Um dies zu erreichen, müssen die einzelnen Aspekte einer chronischen Erkrankung wie die Symptome, die emotionale Situation, komplexe Medikationen und die Auswirkungen auf den Alltag bzw. den Lebensstil bedacht und gemeinsam mit den Betroffenen besprochen werden [73]. Das Modell bezieht alle Ebenen der gesundheitlichen Versorgung und Entscheidungsfindung mit ein und schlägt vor, dass umfassende Versorgungsprogramme für chronisch Kranke idealerweise sechs Schlüsselelemente umfassen [73,75].

Vier dieser Elemente beziehen sich auf die direkte Gesundheitsversorgung durch Leistungserbringer. (1) *Selbstmanagement:* Im Zentrum des CCM steht der informierte und aktivierte Patient. (2) *Umgestaltung der Versorgung*: Versorgungsabläufe werden neu konzipiert, Schnittstellen und Verantwortung für einzelne Bereiche werden neu definiert. (3) *Entscheidungsunterstützung:* Entscheidungen werden auf der Grundlage evidenzbasierter Leitlinien und klinischer Standards getroffen und Patienten erhalten verständliche Informationshilfen. (4) *Klinische Informationssysteme:* Dazu gehören z.B. elektronische Patientenakten, die Informationen über hochkomplexe Patienten sammeln und auswerten, um die Kommunikation und Koordination im Versorgungsprozess zu verbessern.

Die zwei verbleibenden und miteinander verknüpften Elemente beziehen sich auf den Kontext bzw. das Umfeld, in dem die Versorgung bereitgestellt wird. (5) *Das Gesundheitssystem*: Damit sind die organisatorischen Rahmenbedingungen gemeint, die für die Versorgung vorhanden sind. Als ein entscheidendes Element wird ebenfalls die Bereitschaft der Akteure und Entscheidungsträger zur Veränderung beschrieben, was aber zugleich auch eine Einschränkung sein kann, wenn diese nicht in vollem Maße vorhanden ist. (6) *Gemeinderessourcen:* Darunter werden die vorhandenen und verfügbaren Ressourcen in der Gemeinde (abseits des Gesundheitssystems) verstanden, wie z.B. Selbsthilfegruppen, Pflegedienste, Essen auf Rädern, etc.

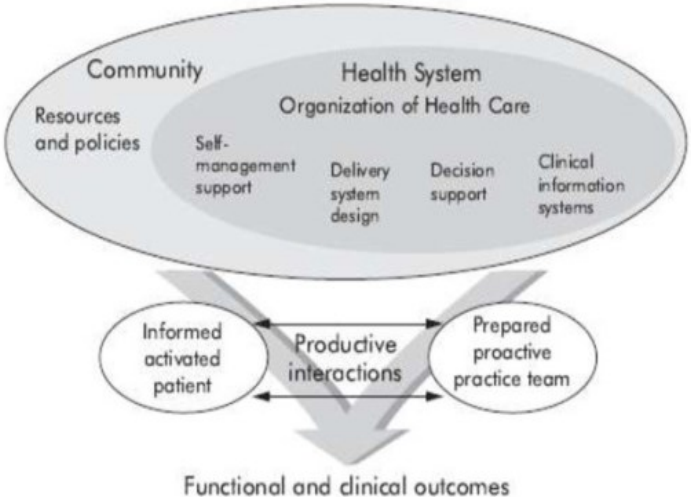

Abbildung 1.3: Wagner's chronic care model

Das CCM-Modell hat bereits Leistungserbringer und Entscheidungsträger auf der ganzen Welt inspiriert und findet in den USA, Kanada, Europa und Australien Verwendung. Unter Berücksichtigung des demografischen Wandels stellt sich jedoch die Frage, wie dieses Modell im Fall von Multimorbidität funktioniert [76]? Das CCM beschreibt welche Elemente zur Unterstützung von Patienten mit einzelnen chronischen Erkrankungen eingesetzt werden sollten, nicht aber, wie diese Elemente mit Multimorbidität umgehen sollten [77].

Ein anderes, oft verwendetes und umfassendes Modell zur Beschreibung des Zusammenhangs von integrierter und ambulanter Versorgung ist das Rainbow model of integrated care, welches von Valentijn et al., 2013 entwickelt wurde (siehe Abb.1.4). Integration kann hier auf der Makro-, Meso- und Mikroebene stattfinden und hat das Ziel, die Versorgungsqualität zu verbessern. Beginnend mit der Makroebene kann Integration beispielsweise innerhalb von verschiedenen Sektoren des Gesundheitswesens stattfinden. Hier spricht man von der Systemintegration. Werden sowohl Primär-, Sekundär- als auch Tertiärversorgungssektoren integriert, kann ein Kontinuum der Versorgung erreicht werden. Auf der Mesoebene kann Integration innerhalb von oder zwischen Organisationen stattfinden. Innerhalb einer Organisation kann zum Beispiel zwischen verschiedenen Abteilungen eine professionelle Integration durch Zusammenarbeit des Personals entstehen. Es kann aber auch eine Integration zwischen unterschiedlichen, einzelnen Organisationen erfolgen. Auf der Mikroebene liegt der Fokus auf der betroffenen Person, deren Versorgung sich mehr auf die Integration und Koordination der Leistungserbringung als auf die Erkrankung selbst konzentriert [60].

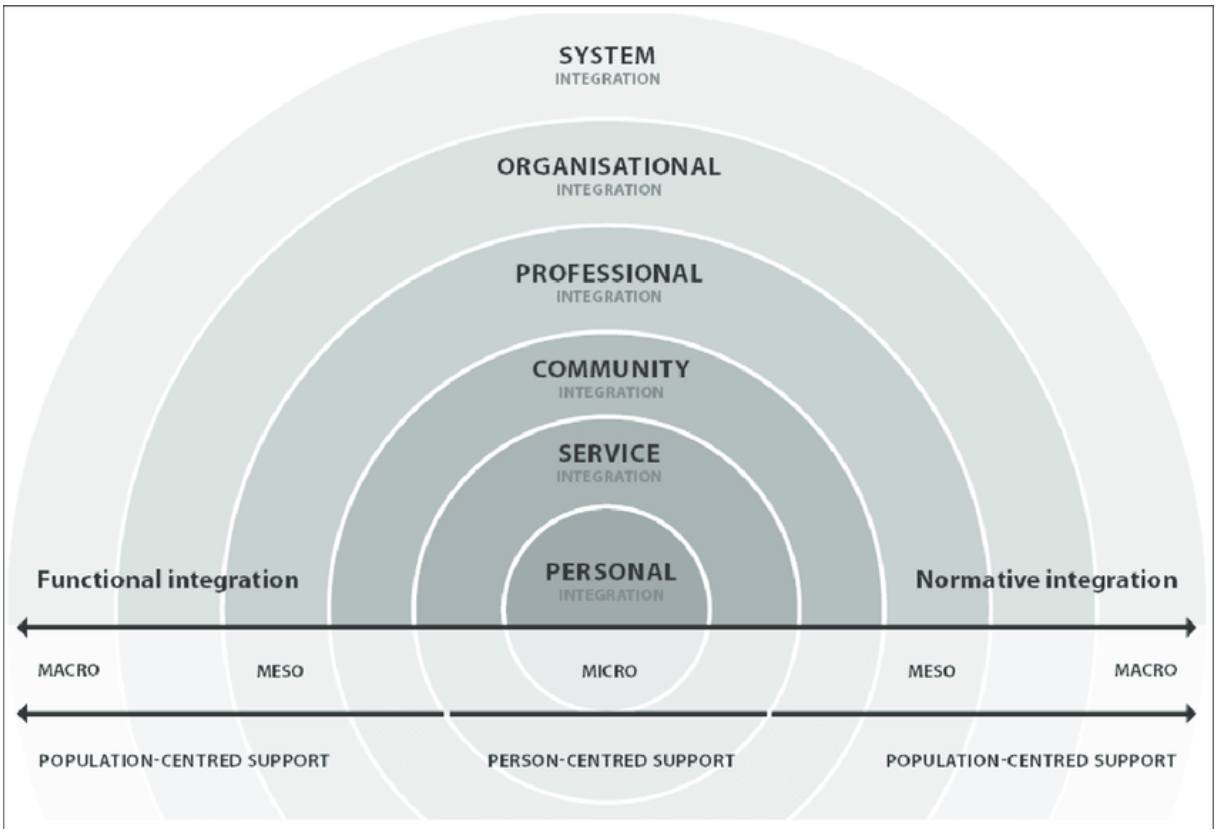

Abbildung 1.4: Rainbow model of integrated care

Das Modell von Valentijn et al. ist ein erster Schritt, um ein besseres und systematisches Verständnis des Zusammenhangs von integrierter Versorgung und ambulanter Versorgung zu erhalten, jedoch berücksichtigt es nicht speziell den Aspekt der Multimorbidität. Integrierte Versorgung wird hier demnach nicht speziell auf das Vorhandensein von Multimorbidität abgestimmt.

1.2.2 Umsetzung von integrierten Versorgungsprogrammen für chronisch Kranke und Multimorbide in Europa

Erste integrierte Versorgungsmodelle wurden bereits in den 1980er Jahren in den USA entwickelt. Das Model der ‚pyramid of care' der Kaiser Permanante aus Kalifornien und das Evercare Modell aus Minnesota sind bisher die bekanntesten und einflussreichsten (6). Die Erfahrungen aus den USA und der neue personenzentrierte Versorgungsansatz, der gekennzeichnet ist durch eine Einbeziehung des Patienten und eine Orientierung an dessen Bedürfnissen, hat auch die Gesundheitsversorgung in Europa und anderswo beeinflusst [78, 57, 78, 79, 80]. Da Innovationen innerhalb der Versorgung dringend notwendig sind, haben viele europäische Länder darauf reagiert, indem sie mit integrierten Versorgungsprogrammen für einzelne chronische Erkrankungen experimentieren. So wächst auch die Evidenz für deren Wirksamkeit zunehmend [70, 81, 82, 83, 84, 85, 86, 87, 88]. Was genau jedoch unter integrierter Versorgung in europäischen Ländern verstanden wird, ist bisher sehr unterschiedlich.

Um auch den Bedürfnissen von Menschen mit Multimorbidität besser gerecht zu werden, wurden in den letzten Jahren ebenfalls innovative integrierte Versorgungsmodelle entwickelt, die derzeit auf lokaler oder regionaler Ebene in europäischen Ländern implementiert werden [89, 90, 91, 92]. Europäische Gesundheitssysteme haben demnach die Notwendigkeit einer personenzentrierten und integrierten, im Gegensatz zu einer fragmentierten und auf einzelne Krankheiten fokussierten Versorgung, erkannt [93].

Obwohl erste Veränderungen bereits stattfinden, sind weitere signifikante Verbesserungen auf Gesundheitssystemebene dringend erforderlich [94]. Denn in Bezug auf integrierte Versorgungsprogramme für multimorbide Personen mangelt es weiterhin an Evidenz darüber, wie diese speziell für diese Bevölkerungsgruppe geplant und organisiert werden können [95, 96, 97, 98]. Bestehende integrierte Versorgungsprogramme für Multimorbide sind sehr heterogen, so unterscheiden sie sich hinsichtlich der Zielgruppe, teilnehmenden Gesundheitspersonals, Umsetzungsstrategien, verwendeter Elemente und der Form der Versorgung. Trotz der Komplexität und Diversität integrierter Versorgungsprogramme werden diese von Wissenschaftlern, Programmmanagern und Politikern als vielversprechende Lösung erachtet. Damit einhergehen hohe Erwartungen an die vielfältigen Ziele, die damit möglicherweise erreicht werden können [99, 100]. Da das Interesse stetig wächst, ist es für die Entwicklung und Umsetzung effektiver integrierter Versorgungsprogramme für multimorbide Personen relevant, mehr Wissen über einzelne, zentrale und zusammenhängende Elemente, Charakteristika und Determinanten zu erlangen, die zum Erfolg von integrierten Versorgungsprogrammen beitragen [62]. Weitere Forschung in dieser Hinsicht ist daher erforderlich [93, 101, 102, 95, 97, 98].

Darüber hinaus wäre es demnach hilfreich, ein allgemeines Modell zu verwenden, das relevante Konzepte, Elemente und Charakteristika strukturiert. Gegenwärtig beziehen sich integrierte Versorgungsprogramme, die die Bedürfnisse und Präferenzen des Betroffenen in den Mittelpunkt stellen, oft auf Elemente des in Abschnitt 1.2.1 beschriebenen CCM von Wagner et al. [73, 28]. Dieses Modell wurde, wie in Abschnitt 1.2.1 beschrieben, jedoch nicht speziell für die Versorgung multimorbider Personen entwickelt. Aufgrund der speziellen Bedürfnisse Multimorbider müssen allerdings spezifische Probleme stärker berücksichtigt werden, etwa der Umgang mit mehreren Leistungserbringern, die möglicherweise in verschiedenen Sektoren arbeiten; das Risiko einer Fragmentierung der Versorgung; Vergütungsmechanismen, welche Multimorbidität angemessen berücksichtigen; Behandlungsinteraktionen; die Notwendigkeit der Priorisierung von Behandlungszielen und die Anwendbarkeit einzelner Krankheitsrichtlinien. Bisher fehlt allerdings ein Modell, welches die integrierte Versorgung speziell auf Multimorbidität abstimmt, um bestimmte Elemente erweitert und eine systematische Beschreibung, Analyse und Evaluation unterstützt.

1.3 Finanzierung von integrierter Versorgung für Multimorbide in Europa

Multimorbide akkumulieren die meisten Krankheits- bzw. Versorgungskosten, die aufgrund erhöhter Leistungsinanspruchnahme, Krankenhauseinweisungen sowie der Einnahme einer Vielzahl verschreibungspflichtiger Medikamente entstehen und führen damit zu einer weiteren Herausforderung für europäische Gesundheitssysteme [103, 104, 105, 106]. Eine erhöhte Leistungsinanspruchnahme führt zu steigenden Versorgungskosten. So konnten verschiedene Studien bereits belegen, dass die Versorgungskosten mit jeder weiteren chronischen Erkrankung überproportional steigen [12, 107]. Interessant ist in diesem Zusammenhang, dass dabei die Haupterkrankung unwichtiger ist, als die Anzahl der weiteren Erkrankungen. Das heißt, dass die Krankheitslast zu den wichtigsten Prädiktoren für die steigenden Versorgungskosten gehört [105, 107].

Die steigende Prävalenz von Multimorbidität stellt somit auch die Gesundheitsfinanzierung vor neue Herausforderungen hinsichtlich (1) adäquater Finanzierungsquellen und (2) Vergütungsmethoden [108]. Daher ist es wichtig, nachhaltige Finanzierungsquellen zu mobilisieren sowie effektive Vergütungsmethoden zu entwickeln und zu implementieren, die die Anforderungen an die Verbesserung der Versorgungsqualität von Personen mit Multimorbidität erfüllen und eine bessere Koordination sowie Integration der Versorgung fördern. Ebenso wie die bestehenden Versorgungsmodelle (siehe vorherigen Abschnitt 1.2) nicht ausreichend sind für eine qualitativ hochwertige und koordinierte Versorgung Multimorbider, bieten die derzeitig gängigen Vergütungsmechanismen keine geeigneten Anreize für eine integrierte Versorgung. Insbesondere „traditionelle" Formen der Gesundheitsversorgung, wie z. B. Einzelleistungsvergütung („Fee for Service“) und andere leistungsbezogene Zahlungen, erstatten einzelne Versorgungseinheiten, was vor allem bei der Vergütung von akuten Erkrankungen angewandt wird. Es wird argumentiert, dass chronische Krankheiten, im Gegensatz zu akuten Erkrankungen, eine langfristige Perspektive mit einer fortlaufenden vorbeugenden Behandlung erfordern, die durch diese traditionellen Zahlungsmechanismen nicht gefördert wird [108].

Die Finanzierung ist ein zentraler Aspekt bei der Entwicklung umfassender integrierter Versorgungsprogramme und kann die Zusammenarbeit zwischen mehreren Leistungserbringern und eine bessere Qualität der Patientenversorgung fördern. Eine besonders wichtige Rolle spielen in diesem Zusammenhang Vergütungsmethoden, da sie starke Anreize für Leistungserbringer schaffen können und die Erbringung von integrierter Versorgung beeinflussen [109]. So können sie beispielsweise Anreize für eine unerwünschte Leistungsausweitung geben, beeinflussen verwendete Diagnose- und Behandlungsverfahren und die Häufigkeit der Überweisung an andere Leistungserbringer. Darüber hinaus wird durch die Fragmentierung des Gesundheitssystems und

damit einhergehend ebenso fragmentierten Finanzierungs- und Vergütungssystemen kein Anreiz für eine professionelle Zusammenarbeit und Koordination der Versorgung geschaffen [108]. Vergütungsmechanismen wurden bisher, trotz ihres großen Einflusses auf die Implementation von integrierter Versorgung für Multimorbide nicht umfangreich untersucht. Daher können politische Entscheidungsträger und Entwickler integrierter Versorgungsprogramme gegenwärtig nicht alle innovativen Finanzierungs- und Anreizsysteme miteinander vergleichen und bewerten.

1.4 Fragestellung und Struktur der Arbeit

Als Antwort auf die wachsende Prävalenz von Multimorbidität werden derzeit in vielen europäischen Ländern innovative Versorgungsprogramme entwickelt und implementiert, obwohl der Nachweis ihrer Wirksamkeit nach wie vor begrenzt ist. Es bleibt daher bislang unklar, ob und wie eine integrierte Versorgung die damit verbundenen hohen und unterschiedlichen Erwartungen erfüllen kann. Deshalb ist das übergeordnete Ziel dieser kumulativen Dissertation, integrierte Versorgungsprogramme für multimorbide Personen in Europa zu analysieren, um innovative Lösungsansätze zu identifizieren und mögliches Verbesserungspotential zu ermitteln.

Die Dissertation lässt sich in drei Teile gliedern (siehe Abb.1.5). Im ersten Teil (A) werden bereits implementierte, europäische integrierte Versorgungsprogramme für multimorbide Personen hinsichtlich der Anwendung innovativer Elemente und Strukturen analysiert (Kapitel 2 & 3). Aufbauend auf den Erkenntnissen aus der Praxis, wird im darauf folgenden theoretischen Teil (B) ein konzeptueller Rahmen zur systematischen Beschreibung und Analyse integrierter Versorgungsprogramme für Multimorbide entwickelt (Kapitel 4 & 5), während der letzte Teil (C) sich der Weiterentwicklung von Vergütungsmethoden für die integrierte Versorgung von Multimorbiden widmet (Kapitel 6 & 7).

Ziel der Arbeit ist die Beantwortung folgender Fragen:

1. Wie wird integrierte Versorgung für Multimorbidität in Europa umgesetzt und zu welchen Ergebnissen trägt sie bei? Welche Elemente sind für eine erfolgreiche Implementierung von integrierten Versorgungsprogrammen für multimorbide Personen relevant, förderlich oder hemmend?

2. Wie lassen sich integrierte Versorgungsprogramme für Multimorbide systematisch entwickeln, beschreiben und analysieren?

3. Werden individuell angepasste Vergütungsmethoden in europäischen Programmen zur integrierten Versorgung verwendet und sind deren Leistungsanreize für die Versorgung multimorbider Personen geeignet?

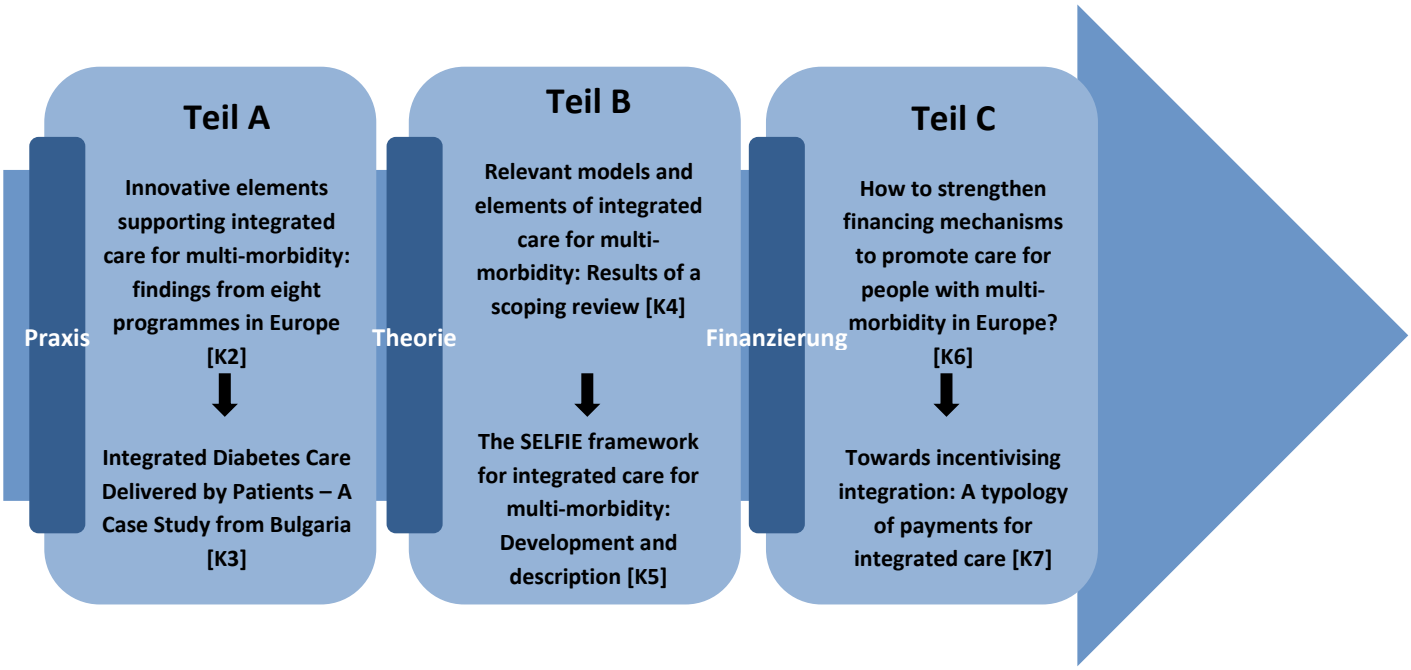

Abbildung 1.5: Übersicht der Kapitel der Dissertation

Um diesen Fragen nachzugehen, wurden in einem ersten Schritt aus 124 integrierten Versorgungsprogrammen in 31 europäischen Ländern, acht integrierte Versorgungsprogramme aus acht verschiedenen Ländern ausgewählt, um diese mittels semi-strukturierter Interviews mit verschiedenen Stakeholdern/Akteuren genauer zu untersuchen. Daraus entstanden sogenannte Case Reports, die diese acht vielversprechenden integrierten Versorgungsprogramme beschreiben (siehe Appendix, Kapitel 2). Diese Dissertation entstand unter anderem im Kontext des EU–Projektes „ICARE4EU“ (Innovating care for people with multiple chronic conditions in Europe), welches zum Ziel hatte, innovative Ansätze der multidisziplinären Versorgung von Menschen mit multiplen chronischen Erkrankungen innerhalb Europas zu beschreiben und zu analysieren. Auf Basis dieser Case Reports entstand Teil A (Kapitel 2 und 3) der vorliegenden Dissertation.

Kapitel 2 leitet diese Arbeit mit einem Vergleich von innovativen integrierten Versorgungsprogrammen im belgischen, bulgarischen, dänischen, deutschen, finnischen, italienischen, niederländischen und zypriotischen Gesundheitssystem ein. Es wird explorativ untersucht, welche Art von integrierten Versorgungsprogrammen aktuell in Europa implementiert und auf welche Weise sie umgesetzt werden. Im Fokus dieses Kapitels steht die Untersuchung relevanter und zentraler Elemente und Strukturen integrierter Versorgungsprogramme.

Kapitel 3 liefert mittels ausgewerteter semi-strukturierter Interviews vor Ort, eine detaillierte und eingehende Analyse innovativer Merkmale eines bulgarischen integrierten Versorgungsprogrammes. Außerdem wird erläutert, welche Schlussfolgerungen aus den praktischen Erfahrungen eines integrierten Versorgungsprogrammes gezogen werden können, welches sich trotz mangelnder politischer und sozioökonomischer Bedingungen etabliert hat.

Derzeit mangelt es, wie in Kapitel 1 bereits erwähnt, an Evidenz bezüglich der Gestaltung und Entwicklung integrierter Versorgungsprogramme speziell für Multimorbide. Deswegen hat der folgende Teil B (Kapitel 4 & 5) dieser Dissertation zum Ziel, das Wissen über den Zusammenhang einzelner Elemente, die zum Erfolg von integrierten Versorgungsprogrammen für Multimorbide beitragen, zu verbessern. In **Kapitel 4** werden mit Hilfe eines umfangreichen scoping reviews relevante theoretische Modelle und Elemente integrierter Versorgung für Multimorbide identifiziert. Im nächsten Schritt wird dann untersucht, welche dieser Modelle und Elemente in kürzlich implementierten integrierten Versorgungsprogrammen für Multimorbide ein- und umgesetzt werden. Ein grundlegender und wesentlicher Punkt des Kapitels ist es, zu untersuchen, ob bestehende Modelle und Elemente für die Versorgung multimorbider Personen adäquat sind.

Um jedoch die Fortführung, die weitere Implementierung und nachhaltige Finanzierung integrierter Versorgungsprogramme für Multimorbide sicherzustellen, muss ein systematischer Austausch ermöglicht werden. Dazu wurde in **Kapitel 5** auf Grundlage des scoping reviews und mittels eines iterativen Prozesses von Expertendiskussionen in acht europäischen Ländern ein Framework für die integrierte Versorgung Multimorbider entwickelt. Das Framework strukturiert relevante Konzepte der integrierten Versorgung für Multimorbidität, basierend auf den oben genannten Methoden. Damit soll erstmalig die Grundlage für Austausch und Vergleich bezüglich integrierter Versorgungsprogramme für Multimorbide innerhalb verschiedener Länder ermöglicht werden, um so eine systematische Beschreibung, Implementation und Analyse zu gewährleisten. Kapitel 4 und 5 wurden im Kontext des EU-Projektes „SELFIE“ (Sustainable integrated care models for multi-morbidity delivery, financing and performance) entwickelt, welches zum Ziel hat, die personenzentrierte Behandlung von Menschen mit Multimorbidität zu verbessern, indem evidenzbasierte und ökonomisch nachhaltige, integrierte Versorgungsmodelle für Menschen mit chronischen Erkrankungen evaluiert werden.

Der letzte Teil C widmet sich in den Kapiteln 6 und 7 einem wichtigen Teilaspekt der integrierten Versorgung multimorbider Personen: der Finanzierung. In **Kapitel 6** wird der Frage nachgegangen, wie und auf welche Weise Vergütungsmechanismen zur Förderung der Versorgung von Personen mit Multimorbidität in Europa gestärkt werden können. Denn bisher werden finanzielle Faktoren, wie beispielsweise unterschiedliche Vergütungsmechanismen häufig als größtes Hindernis für die Umsetzung integrierter Versorgung beschrieben und sind deswegen Gegenstand intensiver Diskussionen. Da der Finanzierung eine Schlüsselrolle bei der Entwicklung umfassender integrierter Versorgungsprogramme zukommt und diese beispielsweise Einfluss auf die Zusammenarbeit zwischen mehreren Leistungserbringern oder einer Verbesserung der Qualität der Patientenversorgung hat, besteht hier dringend weiterer Forschungsbedarf hinsichtlich adäquater Finanzierungsmöglichkeiten. Ein Überblick über die Einführung innovativer, individuell angepasster

Vergütungsmechanismen in europäischen Programmen der integrierten Versorgung für Multimorbide wird in Kapitel 6 gegeben. Die Ergebnisse basieren auf einer Befragung von 124 Projektmanagern aus integrierten Versorgungsprogrammen in 31 europäischen Ländern im Rahmen des oben beschriebenen „ICARE4EU“-Projektes. Außerdem wird zum besseren Verständnis der Anreize unterschiedlicher Vergütungsmethoden ein Framework entwickelt, welches ein systematisches Vorgehen bei der Anpassung grundlegender Vergütungsmethoden für die Unterstützung integrierter Versorgung ermöglichen soll. Der Originalartikel für Kapitel 6 wurde zwecks einer optimierten Lesbarkeit gekürzt und wird hier zusammengefasst präsentiert.

Daran anschließend wird in **Kapitel 7** eine Typologie zur Wirkungsweise von Vergütungsmechanismen innerhalb von integrierter Versorgung für Multimorbide entwickelt. Derzeit sind Vergütungsmethoden für die integrierte Versorgung meist sektor- und krankheitsspezifisch und haben zum Teil bedenkliche Auswirkungen auf diejenigen, die am dringendsten eine integrierte Behandlung benötigen, nämlich multimorbide Personen. Außerdem werden neue Begriffe für Vergütungsmethoden innerhalb der integrierten Versorgung verwendet, die aber zum Teil keine einheitliche Definition oder eindeutige Bedeutung haben. Um diesem Defizit in der aktuellen Literatur zu begegnen, wird mittels einer systematischen Literaturanalyse der aktuellen wissenschaftlichen Literatur gezielt eine neue Typologie entwickelt. Diese Typologie wird daraufhin für Vergütungsmechanismen getestet, die innerhalb von Medicare in den USA und ausgewählten europäischen Ländern eingesetzt werden. Die Typologie könnte eine Grundlage für die Verbesserung finanzieller Anreize für wirksamere und effizientere integrierte Versorgungssysteme bieten.

Im abschließenden **Kapitel 8** werden die Ergebnisse dieser Arbeit und deren weiterer wissenschaftlicher Forschungsbedarf vor dem Hintergrund möglicher politischer Implikationen zusammengefasst und diskutiert.

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Kapitel 2

Innovative elements supporting integrated care for multimorbidity: findings from eight programmes in Europe

Verena Struckmann

1. Introduction

Increasing numbers of people living with (multiple) chronic diseases are challenging European countries and have drawn attention to the need for health system reforms [1, 2]. In Europe alone, an estimated 50 million people suffer from multiple chronic diseases (multimorbidity), a number that is expected to increase while populations are ageing [3]. In addition, multimorbidity is associated with a lower quality of life, a higher age-adjusted mortality, and greater healthcare utilization such as a greater likelihood to be admitted to a hospital [4-6]. Current service provision is often neglecting the complex care needs of multimorbid persons. Usually, individual diseases are treated and managed separately, which may result in care fragmentation and, consequently, a suboptimal quality, duplicative or inefficient care and perhaps even harmful care. A shift is needed from a single disease approach to a patient-centred approach that better coordinates and integrates care across different parts of the health system. This new approach should also better integrate a multimorbid person's needs, capabilities and preferences [2, 7-10].

In Europe, many countries have been experimenting with innovative integrated care programmes to better respond to the various health and social needs of multimorbid persons. Systematic reviews have assessed the evidence about the effectiveness of some of these integrated care programmes among frail and/or multi-morbid populations. The evidence base for the effectiveness of various methods of integrated care for frail and/ or multi-morbid populations is still limited. Moreover, evidence is still lacking on how to best design and organise integrated care specifically for multimorbid persons [11-15].

In response to this lack of evidence, several European projects or actions have been set up over the last years to gain more insight in innovative and potentially effective integrated care models for multimorbidity from a more pragmatic point of view, by studying good practices and learning from the experiences of those involved in the development and implementation of such practices. This chapter reports upon the innovative elements we have identified as part of the EU funded *Innovating care for people with multiple chronic conditions in Europe* (ICARE4EU) project, in which integrated care programmes targeting people with multimorbidity were studied from four perspectives [15]:

- management, care integration and professional competencies,
- patient-centredness,
- financing,
- the use of eHealth

An in-depth analysis of eight particularly innovative programmes delivering integrated care for multimorbid persons in Belgium, Bulgaria, Cyprus, Denmark, Finland, Germany, Spain and the

Netherlands was conducted. The aim of this analysis was to gain insights into how and whether integrated care programmes for multimorbid persons are designed around these persons health needs and, if so, what were the innovative enabling and hindering elements. This chapter describes the innovative key elements that seemed to be relevant and could contribute to the improved design, wider applicability and mutual learning process about how to implement integrated care for people with multimorbidity.

2. Methods

2.1 Sample and Data collection

Data about practices or 'programmes' that provide integrated care for people with multimorbidity were gathered in 2014 in 31 European countries.

Using expert organizations in each country included in the study to identify integrated care programmes for people with multimorbidity resulted initially in 189 identified programmes from 25 European countries (out of 31 countries). Subsequently, the programme managers of the identified programmes were asked to provide data about their care programme by means of an online questionnaire. This questionnaire was available in eleven languages and contained questions relating to the four investigated perspectives, i.e. (1) management, care integration and professional competencies, (2) patient-centredness, (3) financing, and (4) the use of eHealth. After being carefully reviewed by the ICARE4EU project team, 123 programs from 25 countries met all criteria and were therefore eligible. However, data collection of the 11 programs identified in France failed, due to staff problems of the French expert organization, thus data was gathered from 112 programs in 24 countries.

Innovative practices were selected (based on the information provided by the survey) for a site visit and further study. Each of the eight programmes was visited by two or three members of the ICARE4EU project team from two different partner institutes, in order to have multiple perspectives covered by the visiting teams (see Appendix for more details regarding the site visits). The following eight programmes were selected for site visits (see Table 2.1). Interviewed stakeholders included the programme manager, care professionals from various disciplines or services, representatives of patients' or informal carers' associations, if possible.

2.2 Data analysis

This analysis summarizes the responses provided for each of the eight programmes. In addition, (translated) programme materials, publications or publicly available materials were analysed.

Separate case reports about the eight programmes were written and published on the ICARE4EU project website [http://www.icare4eu.org/] in 2015 [19-26].

In this chapter data are used from the ICARE4EU survey, the site visits (and the documents (papers, reports) previously published about the eight programmes. No statistical tests or analysis were performed. Interpretation of the results is based on the data as presented in the eight case reports and the authors understanding and experience.

Programme name	*Location*	*Target population*	*Aim*
PROTOCOL 3	Belgium (BE)	Community dwelling frail elderly	The aim of the Belgian PROTOCOL 3 Programme is to reduce the risk of frail older people for institutionalisation by stimulating the development and provision of alternative types of care for frail elderly.
Diabetic Care DCNPO	Bulgaria (BG)	Diabetic and multimorbid persons	Providing comprehensive, accessible integrated care for patients with diabetes and other accompanying chronic diseases, irrespective of their level of frailty, age or insurance status.
Tele-Rehabilitation	Cyprus (CY)	Persons with cardiorespiratory problems	Improving self-management abilities and accessibility of care. It is a home-based rehabilitation service that applies advanced telemedicine with the aim to support patients discharged from the intensive care unit (ICU) during their rehabilitation by using telemedicine tools and tailoring activity according to their morbidity profile.
Clinic for Multimorbidity and Polypharmacy	Denmark (DK)	Multimorbid persons	Optimising the care pathway at the clinic with a holistic same day service and thereby supporting General Practitioners with the care of multimorbid persons.
POTKU (Potilas kuljettajan paikalle)	Finland (FI)	Persons with chronic diseases	Improving patient-centred care by developing individualised care plans for people with chronic illnesses.
Gesundes Kinzigtal	Germany (DE)	Entire population of the region	The guiding principle is the triple aim: improving the health of the population in the Kinzigtal region, improving the individuals experience of care and at the same time reducing the per capita costs of care.
Strategy for Chronic Care	Spain (ES)	Highly complex cases	Development of a comprehensive framework for an integrated care model for patients with chronic diseases and multimorbidity in need of highly complex care.
INCA (Integrated care model)	The Nether-lands (NL)	Primary care population and multimorbid patients	Providing integrated care for patients with multimorbidity by means of a translation of existing Dutch care standards and protocols to an integral modular approach focussing on lifestyle and medical interventions as well as psychosocial aspects.

Table 2.1: Basic information about the 8 innovative multimorbidity programmes

3. Results

3.1 Care coordination, integration and professional competencies and roles

All programmes have a *single point of entry*. People enter the programme either on referral from their general practicioner (GP), voluntary enrolment or referral from multiple sources (e.g. GP and sickness fund). Four of the eight programmes aim to support increasing primary care provision and to enhance the access to community-based services. The organisational structure and *integration of care* across sectors and providers varied between the programmes. Although the primary and secondary care sector was involved in all programmes, integration of the health and social care

sector is still quite rare. Within the Clinic for multimorbidity and polypharmacy (DK) an innovative approach to integrate patient care can be found, the innovative patient pathway (see Box 2.1).

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

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

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

Box 2.1: The Clinic for multimorbidity and polypharmacy (DK) - patient pathway innovation

The Gesundes Kinzigtal (GK) (DE) achieves this through a new management organisation (OptiMedis AG) that prioritises strong stakeholder consensus building and is responsible for care integration and the coordination of all the providers participating in the network [27].

Multidisciplinary teamwork was a key characteristic of all eight programmes. For instance, in the Clinic for Multimorbidity and Polypharmacy (DK), multidisciplinary teams of several specialists regularly meet to make comprehensive assessments of multimorbid persons (22). In the POTKU (FI) programme, multiprofessional teams were found useful in developing joint care processes [23].

Care coordinators/case managers and general practitioners were identified as key players in supporting care coordination and the provision of personalised care in six programmes. Case managers function as the coordinating link between a patient and the care professionals involved in the patient's care [28]. Their activities may include personal meetings with patients, coordination of care processes, as well as home visits or telephone consultations. The level of training, professional background and defined roles of the care managers and care coordinators differ across the programmes. In the Diabetic Care NPO (BG) for instance, trained volunteers act as care coordinators who provide treatment, make home visits, help patients navigate the health system, coordinate services and arrange appointments for specialized treatment or follow-up care [29]. The Strategy for Chronic Care (ES) operates a model of two case managers, with one case manager located in a hospital and one in the community, which helped improve collaboration between these silos and optimised the care of complex patients [25].

Further, providing integrated care for multimorbid persons through innovative elements requires a different skill set than the more traditional single disease focus. Six programmes have developed *special staff training* varying with respect to the overall aim of the programmes.

3.2 Patient centredness

A *patient centred approach*, in which care is tailored to patient needs, resources, preferences and values, is central to all eight programmes.

An integral part of all programmes was a *holistic patient assessment* before enrolment, although the scope varied significantly. At the Clinic for multimorbidity and polypharmacy (DK) for instance, a multidisciplinary team conducts this assessment [22]. In the POTKU (FI) programme, one care professional in conjunction with the patient assesses the complexity of their medical condition(s), the type of treatment (complex/not complex), and the resources available to cope with their condition(s) and treatment (good/poor) [23].

An *individual health and care plan* is often the next step and forms an important element in almost all programmes. Care plans are generally adapted to the personal health and care needs of a person, existing diseases, informal caregiver burden health goals, opinions and wishes, but the

implementation and content differs among the programmes [19, 23 –26]. A typical care plan is provided in Box 2.2.

1. My needs: health-related problems identified by the patient with the support of a health professional
2. My goals: what change in health status is strived for; which is the goal of the jointly agreed treatment?
3. My measures: which health services and measures of the patient planned related to these goals
4. Follow-up and assessment: follow-up appointments to evaluate the implementation of the health and care plan (HCP) and its results
5. Medication, diagnoses and contact person

Box 2.2: The POTKU programme (FI) - individual health care plan

The health care plans are mostly drafted using *Shared decision-making*, i.e. informing patients about their conditions and possible treatment options and jointly discussing their preferences. This was observed in half of the programmes. The Diabetic Care NPO (BG) and Gesundes Kinzigtal (DE) even go one step further and regularly involve patients in the further development of the programme [20, 24].

Many multimorbid persons receive support from family members or friends who often play a crucial role in the care process. Most of the programmes involve informal caregivers from the outset if it is required. Recognising the needs of *informal caregivers is* for example part of the Protocol 3 (BE) programme and assessed as part of the total needs assessment. Moreover, they are also involved in the development of the individual care plan, which included supportive activities by the informal caregiver [19].

The majority of programmes also provided *self-management support* training. For example, the Finnish POTKU programme offered chronically ill persons self-management support based on their initial holistic assessment and invited them to participate in peer groups to develop self-management competencies [23].

3.3 Financing

Initial start-up *funding* for development and piloting, which may be substantial given the complexity of multimorbidity care, often comes from governments, purchasers or providers, or a combination of these three. For example, the Diabetic Care NPO (BG) receives funding from donations and a subsidy from local government, but was never integrated in the usual care financing system also due to a restrictive legal framework. The clinic for multimorbidity and polypharmacy (DK) used funding from the regional government and own budget. The POTKU project (FI) received grants from the Ministry of Health and Social Affairs, but when this money ran out, the programme also stopped, even though evaluations were positive. The Gesundes Kinzigtal Project secured funding from two German sickness

funds. The Ministry of Health funded the INCA (NL) project's first phase, while the health insurers and providers funded the next phase.

The way in which provider payment mechanisms were adopted across the programmes still strongly reflects the different health and social care systems and their existing payment arrangements. This may relate to restrictive national regulatory frameworks. Only the Gesundes Kinzigtal (DE) operated a specific payment mechanism for their programme. Since 2007 the Gesundes Kinzigtal (DE) uses a shared savings contract which is described in Box 2.3.

The Gesundes Kinzigtal programme's financial goal is to improve the margin for the contracting sickness funds. Achieving this involves realizing savings within the Kinzigtal region in relation to German "standardized" costs and a reference period prior to the intervention. Standardized costs are average costs across all sickness funds. They are used in the so-called risk structure compensation mechanism, which allocates money from the central allocation pool, which is managed by an arms-length body and into which all insured in the country pay their contributions, to the approximately 130 sickness funds in the country.

The contracts between Gesundes Kinzigtal GmbH and the two sickness funds are based on the virtual budget of each fund's total allocation from the central allocation pool; "virtual" because the money is not actually passed through to providers, who continue to receive their reimbursements from the sickness funds as usual. The financial result is measured by the total expenditure for the insured Kinzigtal population both within and outside partner institutions compared to the allocation from the pool. If the sickness fund spends less than it receives, the gain is shared between the fund and GK [31].

Innovative financial models like a shared savings contract are still uncommon in Europe, although the financial result has proved reliable. In 2010 the per-capita expenditures of an LKK policy holder in the GK programme relative to those in the control group have decreased about 16.9% since 2005 [34]. Results of an internal evaluation of the AOK and GK over the period of 2006-2013 show that the programme has led to a net annual saving for the sickness funds (AOK and LKK) of close to 3% (after having shared the 6.5% surplus difference with GK). In 2012 the relative cost reduction that can be allocated to the activities of the programme amounted around 7.9% (24).

Box 2.3: The Gesundes Kinzigtal (DE) – population based financing with a shared savings approach

The Gesundes Kinzigtal (DE) therefore has an incentive to reduce inefficiencies inherent to the system, particularly where these are extremely high, e.g. patients using more healthcare services such as those with multimorbidity [30].

3.4 eHealth tools

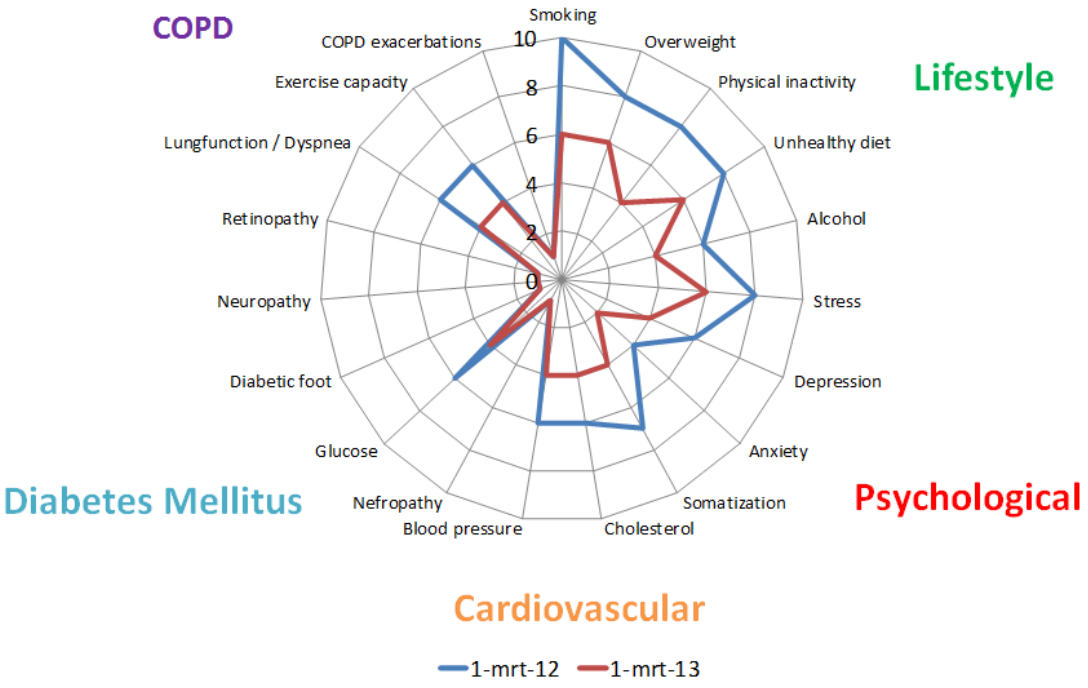
Almost all programmes have implemented different types of information and communication technologies (ICTs), health monitoring tools, used for information exchange, or decision support.

Digital health care communication tools, which include ICT solutions for remote communication or consultation, were found in six of the eight programmes. One example is the remote cardio-respiratory rehabilitation service used by the TeleRehabiliation (CY) programme. This service employs advanced telemedicine to ICU patients after discharge from hospital, enabling home based rehabilitation sessions [21].

Health monitoring systems, which systematically collect and analyse data to measure quality and monitor provider performance, were applied in half of the programmes. The Strategy for Chronic Care (ES) also has a risk stratification system that can proactively monitor e.g. drug therapies and consumption) and predict health risks of their population, which can then be used to recommend strategies for prevention, monitoring and treatment. [25].

Electronic health records (EHRs), which include information on an individual patient's health, were employed in all programmes using ICTs, however the exchange of information between participating providers is often hampered by inter-operability problems. Only two programmes have electronic patient records that are accessible for all providers involved in the integrated care programme, assisting e.g. the coordination and continuity of care in case of hospitalization and discharge planning [25]. Almost all programmes restrict access to EHRs to medical care providers, yet the Clinic for Multimorbidity and Polypharmacy (DK) also shares the EHR with patients participating in the programme, which is common practice in the Danish health system [22].

Decision support systems (DSSs) can link available clinical evidence on appropriate treatments and best practice with the complex profile of people with multimorbidity. The Gesundes Kinzigtal (DE) programme for example, utilises digital benchmark information ('cockpit reports') to compare prescribing behaviour of participating physicians. During regular quality circles the physicians exchange information about how to improve their case management and prescription behaviour [24]. Moreover, the Gesundes Kinzigtal (DE) applies treatment guidelines and integrated care guidelines for most of their 20 programmes offered [32]. In the INCA model (NL), for instance, DSSs are planned as well. Patient care profiles and related information will be accessible by both professionals and patients in a dedicated on-line application, the so-called 'Patient Health Issue Web' (see Box 2.4).



Box 2.4: The INCA model (NL) - Example of a Patient Health Issue Web

This enables an assessment and continuous monitoring of patient's risks and health problems to periodically discuss their progress and adapt the care plan [26].

4. Conclusion

Since there is no framework for the most efficient and satisfactory way of providing integrated care for people with multimorbidity, the programmes described vary greatly with regard to involved care providers, actual care delivery, governance and financing mechanisms applied and e health tools used. A wide variability of implementation strategies or priorities towards an improved care for multimorbid persons was identified among the programmes. This survey found that most common impeding factors for all programmes were existing organizational and structural silos as well as unsupportive national policies.

However, most common key approaches found related to enabling the implementation of programs included both creating new collaborative partnerships, redefining roles and responsibilities for a joint leadership and the paradigm shift towards a patient centred approach. With respect to integration of care a success factor across the programmes are multidisciplinary teams and an active stakeholder involvement. Due to the involvement of different providers from different sectors and finding new effective ways of working amongst existing providers care is better coordinated and the continuity of

care is promoted. Those innovative elements distinguish the programmes from usual care within each country.

While infrastructure support and data sharing were identified as important and supportive for multiprofessional collaboration, their application is not yet common practice in all programmes.

Less than half of all programmes implement (e.g. shared electronic information systems) as a key feature to ensure collaboration and communication. Problems occurring in several countries are either the lack of an ICT infrastructure or the low levels of digital literacy and or technology acceptance. Another recurrent challenge across the programmes is the lacking interoperability between the different ICT systems used in e.g. the ambulatory and hospital sector or across organisations. Thus, programmes as well as policy makers could put more emphasis on the improvement of care for people with multimorbidity through ehealth tools on a local and national level by promoting the regulation, standardisation and adoption of information systems.

New strategies or mechanisms to finance health and social care by changing the way that funding for the program is provided or the way that the providers of care are paid were rarely used. When a programme becomes operational, most projects use public funds from the usual care system. As some programmes ran out after the start - up funding phase ended, shows the importance of addressing the medium- and long- term funding issue right at the start of a project. It was difficult for most of the programmes to achieve a sustainable funding mechanism, without a health policy that guarantees both short- and long- term funding or the prospect of rapid inclusion into the usual care system and access to its funds. Moreover, prevailing financing models in some of the countries cannot yet ensure integration of care, thus payment mechanisms have to be introduced promoting collaboration between multiple providers.

Although this analysis could be informative for programme managers or policy makers, I recognise that using four broad perspectives to analyse the use of innovative elements is simplification of a very complex filed. Nevertheless this chapter aims to clarify important issues related to the implementation of integrated care for multimorbid persons.

Lastly, strong variations in the types of evaluations and data collection were identified. In the majority of programmes evaluations are not conducted regularly, nor are sufficient information about the study design applied. The lack of standardised evaluations and systematic measuring makes a comparison of results difficult and reduces opportunities of learning from these programmes. Integrated care programmes could benefit from the development of indicators that can be used to monitor and compare the processes and outcomes of multimorbidity care. To meet the wide needs of persons with multimorbidity and to convince policy makers to commit to future

investment in integrated care a stronger focus on evaluation is needed. The development of policies and strategies aimed at the organization of integrated care for people with multimorbidity is important, because suatainable changes in the health system can often not be made via programmes only.

5. Appendix Kapitel 2

Details site visits

Program	Country	Visiting partner 1	Visiting partner 2	Date site visit (2015)
POTKU project	Finland	UEF	NIVEL	25-27 February
Gesundes Kinzigtal	Germany	TUB	NIVEL	31 March-1 April
TeleRehabilitation programme	Cyprus	INRCA	NIVEL	2-3 April
INCA-model	Netherlands	NIVEL	TUB	14-15 April
Diabetic care Burgas programme	Bulgaria	TUB	INRCA	11-12 May
Strategy for Chronic Care of the Valencian Region	Spain	INRCA	UEF	15-16 April
Clinic for multimorbidity and polypharmacy	Denmark	UEF	TUB	26-27 May
Protocol 3 programme	Belgium	NIVEL	INRCA	28 May and 12 June

Table 1: Visited programs by the ICARE4EU partners and date of visit

Site-visit POTKU project: Interviews were conducted with the project manager and other actors of the project, representatives of care providers and a representative of a patient family association. In addition, information about the programme, such as data collected previously by the project, other project documents and external information related to the project were studied.

Site-visit Gesundes Kinzigtal: Interviews were conducted with a project initiator, the project manager, a physician, other care professionals and external researchers. Moreover, we received information about future programme plans, we visited the offices of the programme's staff and received brochures and other types of written information about services provided as part of the programme. In addition, documents explaining the model's approach, funding and payment mechanisms, organisational structure, self-management approach and scientific papers describing the evidence of the effectiveness of the programme were studied.

Site-visit TeleRehabilitation programme: Interviews were conducted with the project coordinator, the project manager, a computer scientist, a psychologist and a nurse. Furthermore, information about the technical and organisational aspects of the programme was received and studied. A cost-benefit analysis report, available only in Greek language, was translated in English and used as a relevant source of additional information on possible economic outcomes.

Site-visit INCA-model: Interviews were conducted with the project manager and with a nurse who applied the model as part of a pilot-project. As it turned out during the site visit that the model had not been implemented yet (apart from a very small scale pilot), it was not possible to interview other staff involved. In addition, documents explaining the model were studied.

Site-visit Diabetic care Burgas programme: Interviews were conducted with the programme manager, several programme initiators, several volunteers, specialists and patients. Moreover, we received additional programme related information from a local researcher who helped with the translation of the interviews and the organisation of the entire site visit. Furthermore, information about the initiation of the programme, additional training for volunteers, cooperation structures and funding of the programme was received and studied.

Site-visit Strategy for Chronic Care Valencian Region: Interviews were conducted with the programme coordinators at the Valencian Region, the staff at the pharmaco-economics office, the health staff in three hospitals and two health centres, and patients and family carers. In addition, official documents explaining the policy programme, the care organisation and the implementation of information systems were retrieved from the Valencian Region and healthcare structures, and studied and integrated with the data collected in the interviews.

Site-visit Clinic for multimorbidity and polypharmacy: Interviews were conducted with the project manager, chief doctor, medical doctor, nurse pathway coordinator, secretary pathway coordinator, clinical pharmacist, physiotherapist, occupational therapist and GP. Furthermore, information about the programme, such as presentations and articles describing the clinic, was received and studied.

Site-visit Protocol 3 programme: Two projects of the Protocol 3 programme were visited ("Alternative de Soins" and "Som +"). Interviews were conducted with the programme managers and multiple care providers. Furthermore, information about the programme and its subprojects was received and studied.

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Kapitel 3

Integrated Diabetes Care Delivered by Patients – A Case Study from Bulgaria

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Abstract

Introduction: Increasing numbers of persons are living with multiple chronic diseases and unmet medical needs in Bulgaria.The Bulgarian 'Diabetic care' non-profit organization (DCNPO) programme aims to provide comprehensive integrated care focusing on people with diabetes and their co-morbidities.

Methods: The DCNPO programme was selected as one of eight 'high potential' programmes in the Innovating Care for People with Multiple Chronic Conditions (ICARE4EU) project, covering 31 European countries. Data was first gathered with a questionnaire after which semi-structured interviews with project staff and participants were conducted during a site visit.

Results: The programme trains diabetic patients to act as carers, case managers, self-management trainers and health system navigators for diabetic patients and their family. The programme improved care coordination and patient-centered care by offering free care delivered by a multidisciplinary team. It facilitates the collaboration between patients, volunteers, health providers and the community. Internal evaluations demonstrate reduced hospital admissions and avoidable amputations, with consequent cos savings for the health care system.

Conclusion: Integrated care provided by volunteering patients can empower people suffering from diabetes and their co-morbidities and address health and social inequalities in resource poor settings. It can also contribute to an increased trust and improved satisfaction among vulnerable patients with complex care needs.

1. Introduction

Several studies have observed a rising prevalence and burden of multi-morbidity in Europe, although estimates vary across countries [1–6]. A recent study has shown a higher prevalence of multiple chronic conditions in Eastern European compared to Western European countries [7]. In Bulgaria, which has one of the lowest life expectancies at birth in the WHO European region with 75 years in 2013 [8], non-communicable diseases impose a large health burden. Cardiovascular diseases (CVD) are attributable for almost 70% of the mortality rates [9]. Probable causes for the increase of non-communicable diseases are recent changes in life style, such as increasing tobacco, alcohol and drug consumption, low physical activity, as well as socioeconomic inequalities in accessing appropriate health care services [10]. The rise of persons with chronic diseases and multi-morbidity requires better coordination of care between various health and social care providers and sectors. Yet the Bulgarian health system has long been plagued by care fragmentation, underfunding of health care services, low quality of care and large socioeconomic inequity in access [10]. These problems increase the need for innovative solutions, in particular for vulnerable population groups. Although the government has recently rolled out the National Health Strategy for Prevention of Chronic Non-Communicable Diseases 2014–2020 [11], no specific policies have been implemented at national or regional level until now.

Against this background, in 1994, a programme named 'Diabetes has no limits' was started in Burgas – the fourth largest Bulgarian city with a growing population of about 200,000 inhabitants. It was the initiative of a nurse, a cardiologist, a general practitioner (GP), an ophthalmologist and four diabetic patients. Since then, the name was changed into the Bulgarian 'Diabetic care' non-profit organization programme (DCNPO) (РСНЦ "Диабетни грижи" – Бургас) and the range of services provided was gradually expanded. The DCNPO targets diabetic patients with co-morbidities and their families, but also the general population [12]. The DCNPO is the only programme that offers inexpensive, easy-to-access integrated care for individuals living with diabetes and their co-morbidities in the Burgas region. One of the unique features is the way it trains diabetes patients to become case managers, self-management trainers and health system navigators. The programme's stated goals are to enhance the quality of life of diabetic patients, to increase their ability to cope independently with diabetes and relevant co-morbidities and to assist their integration into society [12]. This article aims to provide an in depth description of the innovative features of the Bulgarian DCNPO programme and concludes with lessons to be learned.

2. Methods

For this case study we used data from the European ICARE4EU (Innovating care for people with multiple chronic conditions) project. This project was initiated in 2013 to contribute to the innovation of care for European citizens with multiple chronic conditions by gaining more insight into potentially effective and efficient patient-centered, multi-disciplinary care approaches that have been developed and implemented in Europe.

Expert organizations in 31 European countries identified integrated care programmes that provided care for people with multi-morbidity. Inclusion criteria for these programmes were:

1. Target adult people with multi-morbidity, defined as two or more medically (i.e. somatic and/or psychiatric) diagnosed chronic (not fully curable) or long lasting (at least six months) diseases, of which at least one of a (primarily) somatic nature;

2. Include formalized collaboration(s) between at least two services, including medical services;

3. Evaluated or planned to be evaluable in some way;

4. Currently running or finished less than 24 months ago or starting within the next 12 months.

According to the above mentioned selection criteria, the ICARE4EU project identified 112 eligible integrated care programmes for patients with multi-morbidity in 25 European countries (out of 31 countries). Information on programmes was collected with the support of expert organizations/programme managers in each country included in the study. They were asked to search and report all integrated care programmes focusing on multi-morbidity in their country. An online questionnaire was available in eleven languages and contained questions on several programme characteristics (e.g. general information, patients, quality and evaluation), including aspects related to eHealth tools eventually adopted within the programmes themselves. In a second step, promising practices were selected for a site visit and further study. To this end, the project team scored the programmes on five dimensions: (1) a general score (e.g. evaluation design, perceived sustainability and transferability), and an indication of its level of (2) patient-centeredness, (3) integration of care, (4) use of eHealth technologies and (5) its innovativeness in financing mechanisms. This resulted in a short list of eight 'high potential' programmes to be visited, among them the Bulgarian DCNPO programme.

Our case study was conducted in May 2015 by means of semi-structured interviews, and a site visit to the DCNPO in Burgas. We held interviews with a range of stakeholders involved in the DCNPO programme, including the manager, the deputy chairperson, a specialist, care managers, and

volunteers. A total of seven staff members were interviewed. The semi-structured interviews lasted between 40 and 90 minutes. They were conducted in English by two of the authors (VS and FB) and simultaneously translated by another author who is a native Bulgarian speaker (AD). They were digitally recorded and transcribed by two different persons. All names were replaced with numbers in order to guarantee anonymity. The participants had the right not to answer and could stop the interview at any time.

3. Description of the care practice

3.1 Programme background and target group

The Bulgarian DCNPO was founded to respond to the need of chronic diabetes patients with co-morbidity for accessible, coordinated and comprehensive medical and social care. The DCNPO approach consists of building a community of diabetes patients and health service providers, who are self-empowered and capable of dealing with complex patients' needs. This approach differs from most Bulgarian non-governmental (NGOs) or non-profit organisations (NPOs), which usually advocate the rights of certain vulnerable patient groups and heavily rely on organizational and financial support from institutions. Indeed, the DCNPO takes a more active role and trains and educates patients in self-management of their chronic condition. Many of them also work as volunteers and provide social and health care assistance (e.g. diabetes management, arrange appointments), help patients navigate the health system and train informal carers. Through the involvement of patients, family members and specialists, the DCNPO achieves strong collaborations and synergies, which allow building on voluntarism rather than the government. Other important elements that characterize the programme are a focus on prevention, care integration, shared decision making and patient-centeredness [12].

Although the programme primarily targets individuals with diabetes, many of the patients served by the DCNPO have multiple chronic diseases (e.g. heart disease, cancer, depression). The DCNPO therefore has increased its scope of services and aims to provide comprehensive and coordinated care to the whole population. Generally, people come from lower socio-economic groups and many have no health insurance [12].

3.2 Care delivery and scope of services

As of 2016, the DCNPO serves 1,600 people, of whom 416 are "active" members in the sense that they pay small (€5) contributions and participate in the social activities organized by the DCNPO, such as meetings, trips and conferences. As of 2016, there are 15 volunteers and three paid care managers, providing the core of the DCNPO's services, including diabetes and additional chronic

disease related acute and long term care services. The programme is directed by a retired former nurse who also chairs the 7 person board, which is made up of DCNPO volunteers. The three care managers permanently staff the DCNPO site and form the first point of contact for new patients. They carry out comprehensive physical examinations and assess the care needs and preferences of the patients. After this first assessment, the volunteers become the patient's focal point. They provide treatment, make home visits, coordinate services and arrange appointments for specialised treatment. After each home visit, the responsible volunteer informs participating care professionals and shares relevant information for a continuous care process. The volunteers also provide training and support to empower patients in becoming active partners in their care process but also in eventually becoming volunteers. Volunteers and care managers are always available for the patients since they can visit and call the DCNPO the entire week. In addition, over 20 care professionals (GPs, specialists, nurses, psychologists, etc.) collaborate with the DCNPO, on a voluntary basis or where possible under health insurance. Together with the professionals, the DCNPO provides a wide spectrum of services (see Box 3.1) [12].

- Diabetes mellitus type II management
- Cancer management in collaboration with other NGOs in Burgas
- Lifestyle intervention for patients with diabetes and cardiovascular diseases
- Education and training of informal carers
- Provision of social care at home
- Home and office based health services
- Diabetic foot management and care
- Active health promotion for patients
- Health education for students and the elderly
- Psychotherapeutic/psychiatric care
- Coronary heart disease management in collaboration with the Cardio Centre Pontika (volunteering cardiologist)
- High blood sugar screening programmes for the general population
- Promotion of patient self-management abilities

Box 3.1: Scope of services covered by DCNPO [12]

Currently, the DCNPO is increasingly focusing on childhood diabetes and has started preparing promotional diabetes campaigns in schools with a focus on nutrition, physical activity, obesity and overweight. Furthermore, both volunteers and patients participate in further developing and assessing the programme [12]. To improve its services, the DCNPO is a founding member of the 'blue circle of hope' (see Box 3.2) and cooperates with several other diabetic care programmes operating in other areas of Bulgaria or abroad [12, 13].

The “Blue circle of hope” is a network of various diabetic care programmes and organizations from different countries and regions, which was started by the DCNPO in 2011. Its name is inspired by the symbol for diabetes (a blue circle), initially developed for a United Nations campaign. The network started off with ten Bulgarian organisations but has been gradually expanding and now has members from Italy, Russia, Serbia, Turkey, and Ukraine. The network schedules regular meetings where daily experiences are shared and latest evidence about diabetes, its prevention and treatment options are discussed. Lastly, the DCNPO invests a great deal of effort in the development of the network and ultimately hopes to establish it as a regional centre for diabetic care that can perform projects and research.

Box 3.2: Blue circle of hope

3.3 Training of volunteers and care managers

Care managers and volunteers basically receive the same training. Specialized training is provided by physicians to younger diabetes patients who could also offer care to others. Their training is comprehensive and consists of continuous individual and group training. The training programmes are based on continuing education programmes by the World Health Organization (WHO) [14] and cover care for patients with diabetes and other chronic problems (e.g. cardiovascular diseases), patient self-management and shared decision-making. In addition, conferences are organized where latest evidence is shared.

Since 1997, physicians who cooperate with the DCNPO have trained 47 unemployed diabetic patients, to act as care managers. They are employed as assistants on a temporary labour contract basis under a programme governed by the Ministry of Labour and Social Policy. This programme aims to ensure employment of people with disabilities or chronic diseases. Currently, three care managers are working for the DCNPO under this programme. In addition, over the same time period, 25 volunteers have been trained to act as volunteers in the programme. Currently, 15 of them are active. Although they receive a similar training, the latter make the home visits and do the follow-ups. They do not work as care managers at the DCNPO site because they have jobs of their own and are only part time volunteers who therefore require flexible hours.

3.4 Care integration and patient-centeredness

Establishing a provider network capable of providing seamless comprehensive and patient-centered care has taken several years. For many patients in need of care, the DCNPO is the first entry point to the health system.

As de facto gatekeeper, the DCNPO can help avoid unnecessary interventions and improve care coordination and continuity for patients. In addition, the DCNPO has enhanced patient-centeredness through the involvement of patients, family and informal carers in the care and decision-making

process. This should ensure effective collaborations and secure their commitment to the care plan [12]. Furthermore, regular communication with community groups, associations, self-help groups, and educational centres allows a continuous holistic assessment of the patient and care approach.

3.5 Financing of the programme

Funding of the DCNPO is quite unconventional. First, the DCNPO receives an annual subsidy from the municipality of Burgas. Funding from the municipality has to be applied for and as a result may vary in size. It has been approximately €2,000 per year the last couple of years [12]. This subsidy is independent of the DCNPO's performance, health outcomes or any achieved savings. Second, DCNPO members pay annual contributions of €5 per person. This constitutes the only stable revenue source. Third, the DCNPO receives funds from the Ministry of Labour and Social Policy for the salaries of the three care managers. Lastly, the DCNPO also receives private donations. However, these have decreased in recent years as a result of the financial crisis and a legislative change that limited deducting donations to charity from tax. This implies that the raised revenue is inadequate to cover all activities and most work is therefore performed on a voluntary basis [12].

3.6 Impact

Until now the impact of the programme has only been evaluated internally and therefore the following outcomes have to be interpreted with caution. The model with diabetic patients acting as volunteers, shared responsibility between patient and professional and continuous learning has altered the patient-provider relationship. Contrary to the often quite hierarchical and traditional regular care system in Bulgaria, the DCNPO model has led to increased trust and patient satisfaction [12]. DCNPO patients adhered better to treatment and had better health outcomes than patients treated in the regular system. The collaborative approach involving the patient, their relatives and informal carers enables better monitoring and follow-up of constantly changing patient needs. Moreover, since 2010 alone, DCNPO activities seemed to have helped preventing about 400 amputations and thus avoidable hospital admissions in complex diabetes cases [12]. This estimation is based on photo documents, patients' dossiers and professional assessments. The cost savings for the health system, based on the number of prevented amputations and the tariff paid by the National Health Insurance Fund (NHIF) per procedure, were calculated at about €200,000. Another positive outcome is that the programme has decreased inequities because vulnerable groups are targeted, some without health insurance, and care is offered free at the point of delivery. These estimations sound credible, as a programme developed by Stanford University (USA), which has some similarity in that it uses chronic patients to train other chronic patients in self-management, has shown similar improvements [15, 16].

4. Discussion

The Chronic Care Model (CCM) proposed by Wagner et al. (1996), perhaps the most used model for chronic care programmes, suggests that such programmes ideally comprise six interlinked key elements [17, 18]. The DCNPO programme contains many of these elements. Indeed, the first element, self-management support, is reflected in the involvement of patients in decisions and the design of their care plan, but also in the provision of health education and self-management training to patients and their families. The second element, delivery system design, broadly focuses on clarifying roles and tasks of all involved, making sure that all the physicians have centralized and up to date information, and that follow- ups are an integral part of the care process. This element is visible in the way care managers and volunteers act as case managers who work in multidisciplinary teams and schedule regular follow-ups and home visits. Although a continuous sharing of relevant information, e.g. after follow-ups and visits, is a key part of the care process, this is not supported by a centralized system. The third element, decision support, is implemented by means of treatment guidelines for providers and training programmes for care managers and volunteers, which are based on WHO guidelines. The fourth element, a clinical information system, does not exist as the DCNPO is not yet using any form of electronic communication technology in their daily work. Until now, information exchange takes place using written notes, telephone, or face-to-face conversations. Moreover, patient records are still in paper form and not electronic. The DCNPO could benefit from a better information infrastructure and low-cost mobile health technology but these remain unaffordable. The fifth element, the health system, focuses on ensuring that senior management, staff and volunteers all visibly support and promote the improvement of chronic care. This element can be viewed as a hallmark of the DCNPO. Without strong leadership, the programme could not have operated in an environment that lacks financial support and where many health professionals still remain hesitant to collaborate (also see below for more elaboration). In addition, the initiation of the blue circle of hope can be seen as an initiative promoting the DCNPO's strong commitment to improving diabetic care. The final element, which relates to effectively using existing community resources, is reflected in several initiatives by the DCNPO to involve the local community, e.g. by offering prevention programmes in schools. Using Wagner's CCM model, the DCNPO can thus be characterised as a successful programme as it integrates many of its fundamental elements, although some, most notably those relating to an effective information system, are missing.

The future for the DCNPO is not without challenges. Firstly, the DCNPO cannot perform effective medium- or long-term financial planning because municipal funding and private donations fluctuate annually. Therefore its potential to save cost should be demonstrated in external evaluations to convince policymakers of this approach [12]. So far this was never carried out due to limited

resources, but perhaps also because the DCNPO managers and volunteers have no doubt that their programme is cost-effective. It is also important to note that legislative changes would be necessary to allow the NHIF to contract integrated care providers such as the DCNPO. Secondly, although the DCNPO is supported by various health professionals, many professionals still seem hesitant to collaborate; perhaps because peer support, health promotion and a self-management approach are not part of their professional culture. A change in culture towards a shared vision is needed if these types of integrated care programmes are to be scaled up nationally [12].

5. Conclusion

The DCNPO programme provides integrated care services of good quality to complex patients in a challenging environment with limited financial and human resources. The DCNPO programme suggests that training patient-volunteers to become carers of other patients can contribute to an increased trust in one-another and improved satisfaction and treatment adherence among patients (see Box 3.3). The DCNPO approach has been widely adopted across Bulgaria and various new initiatives have joined the 'blue circle of hope' network. This provides strong evidence of the transferability of this model in the region. The DCNPO further demonstrates that networking and coordination of actors and professionals in health care is essential in shifting from disease-centered to patient-centered care. Good working relations, clear roles and shared responsibilities among participating actors and professionals of the DCNPO played an important role in overcoming fragmentation of the health care system. In addition, strong bottom-up leadership is crucial as the DCNPO case evidences. Successful replication relies heavily on the commitment to change and persistence of the local leadership and its members.

Programmes such as the DCNPO can inspire others to not accept the constraints of resource-poor settings but to realize that improved care for people with diabetes and their co-morbidities can be organized with volunteers and patients. Yet relying on volunteers should not be the goal but rather the means to achieve integration in formal care and thus access to proper funding.

Non-profit care provided by volunteering patients can play a major role in addressing health and social inequalities where public health care systems and the socioeconomic context are insufficient

Trained volunteers who are patients themselves can contribute to an increased trust, respect and improved satisfaction among vulnerable patients with complex care needs

Successful replication relies heavily on the commitment, and persistence of the leadership and its members but could be especially effective in resource-poor settings

Box 3.3: Main conclusions

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Kapitel 4

Relevant models and elements of integrated care for multi-morbidity: Results of a scoping review

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Abstract

Background: In order to provide adequate care for the growing group of persons with multi-morbidity, innovative integrated care programmes are appearing. The aims of the current scoping review were to i) identify relevant models and elements of integrated care for multi-morbidity and ii) to subsequently identify which of these models and elements are applied in integrated care programmes for multi-morbidity.

Methods: A scoping review was conducted in the following scientific databases: Cochrane, Embase, PubMed, PsycInfo, Scopus, Sociological Abstracts, Social Services Abstracts, and Web of Science. A search strategy encompassing a) models, elements and programmes, b) integrated care, and c) multi-morbidity was used to identify both models and elements (aim 1) and implemented programmes of integrated care for multi-morbidity (aim 2). Data extraction was done by two independent reviewers. Besides general information on publications (e.g. publication year, geographical region, study design, and target group), data was extracted on models and elements that publications refer to, as well as which models and elements are applied in recently implemented programmes in the EU and US.

Results: In the review 11,641 articles were identified. After title and abstract screening, 272 articles remained. Full text screening resulted in the inclusion of 92 articles on models and elements, and 50 articles on programmes, of which 16 were unique programmes in the EU (n = 11) and US (n = 5). Wagner's Chronic Care Model (CCM) and the Guided Care Model (GCM) were most often referred to (CCM n = 31; GCM n = 6); the majority of the other models found were only referred to once (aim 1). Both the CCM and GCM focus on integrated care in general and do not explicitly focus on multi-morbidity. Identified elements of integrated care were clustered according to the WHO health system building blocks. Most elements pertained to 'service delivery'. Across all components, the five elements referred to most often are person-centred care, holistic or needs assessment, integration and coordination of care services and/or professionals, collaboration, and self-management (aim 1). Most (n = 10) of the 16 identified implemented programmes for multi-morbidity referred to the CCM (aim 2). Of all identified programmes, the elements most often included were self-management, comprehensive assessment, interdisciplinary care or collaboration, person-centred care and electronic information system (aim 2).

Conclusion: Most models and elements found in the literature focus on integrated care in general and do not explicitly focus on multi-morbidity. In line with this, most programmes identified in the literature build on the CCM. A comprehensive framework that better accounts for the complexities resulting from multi-morbidity is needed.

1. Introduction

Due to an ageing society and changing epidemiology, the number of people with chronic diseases is increasing. Consequently the burden of multi-morbidity in European countries is growing [1–4]. Even though the prevalence of multi-morbidity increases with age, the relative majority of persons with multi-morbidity are of working age [2, 4–6]. Over the past decades many definitions have evolved explaining what integrated care and multi-morbidity is. So far, there is no single definition existing for integrated care or multi-morbidity. Some studies define multi-morbidity as 'the co-occurrence of two or more chronic or long-term conditions within the same persons' [1, 3]. A general definition of integrated care is provided by the WHO, which describes integrated care as: "the management and delivery of health services such that people receive a continuum of health promotion, health protection and disease prevention services, as well as diagnosis, treatment, long-term care, rehabilitation, and palliative care services through the different levels and sites of care within the health system and according to their needs" [7].

Multi-morbidity constitutes a challenge for the organisation of health and social care in western countries, because the care for persons with multiple chronic conditions, provided by multiple care providers from different sites and sectors, often lacks alignment. The need to provide person-centred integrated care as opposed to fragmented and single-disease focused care has been well recognised [8]. Consequently, there is an urgent need for integrated care services for multi-morbid persons that are truly person-centred, meaning that services are tailored to the individuals' needs, capabilities and preferences, rather than just to a particular disease [9].

Disease-specific integrated care programmes have in recent years been increasingly implemented in European countries or regions, and the evidence base for their effectiveness is growing [10–17]. However, evidence is lacking on how to best design and organise integrated care specifically for multi-morbid persons. Further research in this respect is therefore needed [8, 18–23]. An important precursor to developing and implementing effective integrated care programmes for persons with multiple chronic conditions is to gain more knowledge about single and interrelated elements that contribute to the success of integrated care programmes. For this reason, we performed a scoping review in which we aimed to identify relevant models and elements for integrated care especially for multi-morbidity (aim 1). Models are defined in the current study as existing frameworks or theories while elements are defined as components or concepts that often make up models. Subsequently, we aimed to identify which of these models and elements were used to build integrated care programmes, which are defined as real-world care practices, for persons with multi-morbidity described in the scientific literature (aim 2). This review was performed in the context of the Horizon2020 EU project SELFIE, which is described in Box 1.

2. Methods

2.1. Study design

A scoping review was conducted to address the two research aims. One overall search strategy was used to find literature pertaining to either or both of the two aims. However, different in- and exclusion criteria and data extraction methods were applied. Data was extracted according to PRISMA guidelines [24].

A scoping review aims to identify relevant literature and key concepts addressing a broader topic, while focusing on more than one research question. It includes different study designs and types of evidence available, and does not involve an assessment of the quality of included publications [25, 26].

SELFIE (Sustainable intEgrated chronic care modeLs for multi-morbidity: delivery, FInancing, and performancE) is a Horizon2020 funded EU project that aims to contribute to the improvement of person-centred care for persons with multi-morbidity by proposing evidence-based, economically sustainable, integrated care programmes that stimulate cooperation across health and social care and are supported by appropriate financing and payment schemes. More specifically, SELFIE aims to:

- Develop a taxonomy of promising integrated care programmes for persons with multi-morbidity;
- Provide evidence-based advice on matching financing/payment schemes with adequate incentives to implement integrated care;
- Provide empirical evidence of the impact of promising integrated care on a wide range of outcomes using Multi-Criteria Decision Analysis;
- Develop implementation and change strategies tailored to different care settings and contexts in Europe, especially Central and Eastern Europe.

The SELFIE consortium includes eight countries: the Netherlands (coordinator), Austria, Croatia, Germany, Hungary, Norway, Spain, and the UK. www.selfie2020.eu [Grant Agreement No 634288].

Box 4.1: About the SELFIE project

We followed the methodology of Armstrong et al. [27], which allowed us to review different aspects related to integrated care for multi-morbidity [27].

Definitions were developed for the scoping review:

i. "Multi-morbidity" refers to multiple (e.g. at least two) chronic conditions, physical or mental, occurring in one person at the same time, where one is not just a known complication of the other.

ii. "Integrated care" refers to structured efforts to provide coordinated, pro-active, person-centred, multidisciplinary care by two or more communicating and collaborating care providers. Providers may work at the same organisation or different organisations, either within the health care sector or across the health care, social care, or community care sectors (including informal care).

iii. "Model" refers to any existing framework or theory for integrated care, this pertains to the 'abstract' and intangible.

iv. "Element" refers to any specific component or concept to provide integrated care, elements can be parts of a model (iii) or a programme (v).

v. "Programme" refers to any existing care provision, practice or initiative, programmes are thus real-world approaches to provide care for patients or clients. These programmes can range from small-scale case finding, regional, to population health management approaches.

2.2. Search strategy

We searched in the following scientific databases: Cochrane, Embase, PubMed, PsycInfo, Scopus, Social Services Abstracts Sociological Abstracts, and Web of Science in October 2015. A comprehensive search strategy was developed jointly by all authors with the assistance of a librarian to identify English language articles published since 1990. The search algorithm comprised search terms (and their linguistic variations) pertaining to: a) models, elements, and programmes, b) integrated care, and c) multi-morbidity (see Appendix file 1). We searched predominantly in title and abstract, but where possible used indexed terms (e.g. MeSH, subject, key). Because using 'comorbidity' as an indexed term led to a large number of results, most of which were not relevant to our research aims, this term was only searched for in title and abstract. However, an additional search that included comorbidity as an indexed term was done in three large databases (Embase, PubMed, and PsycInfo). These results were compared to those from our original search not including comorbidity as an indexed term (a so-called 'NOT' search). This left us with the non-overlapping articles, to which we applied the 'most relevant' functions that these search engines offer to subsequently include the top 25 articles from each into our findings.

2.3. Study selection

First the titles and abstracts were screened for relevance by two independent reviewers (VS, HE) (step 1). Publications considered relevant only by one of the two reviewers were discussed until consensus was reached, then the full text publication was retrieved. Afterwards, the full text

publications were reviewed by two other independent reviewers (MR, MK) (step 2). Articles could be included for aim 1 (relevant models and elements), aim 2 (programmes), or both.

Publications were *included* for aim 1, if:

- A model of integrated care for multi-morbidity is described
- Key elements of integrated care for multi-morbidity are described

Publications were *excluded* for aim 1, if:

- There is a single-disease focus
- A biomedical study is described
- They were meta-analyses, conference abstracts, letters to the editor, editorials, or commentaries
- No full text paper was available
- They were not written in English language

Articles could be *included* for aim 2 (programmes), if:

- An integrated care programme for multi-morbid persons is described or (about to be) evaluated

Articles were *excluded* for aim 2 (programmes), if:

- There is a single-disease focus
- A biomedical study is described
- They were meta-analyses, conference abstracts, letters to the editor, editorials, or commentaries
- The target population was exclusively <18 years
- No full text paper was available
- They were not written in English language

For aim 2, an additional study selection took place after the initial in- and exclusion. Publications were excluded if: 1. the integrated care programme is not in the EU or US, 2. the publication is a review of programmes, and 3. the publication is from before 2010 to limit the in-depth analysis to most recently studied and discussed programmes.

2.4. Data extraction and reporting

Data was extracted by six reviewers (VS-AS, FL-MB, MR-MK) who worked in pairs to extract relevant information from the publications according to their assignment to aims 1 and 2. Any disagreement between the six reviewers was resolved by consensus and with the support of two additional member of the project team (MRvM/EvG). Articles were reviewed in December 2015 and January

2016 by designated first reviewers and re-assessed by the second reviewers in January and February 2016.

In a first step, general information on the publication and/or programme was extracted (e.g. publication details, study design, target group, country of origin/geographical region). In a second step, information specifically pertaining to the two research aims was extracted. Data described for aim 1 includes models and elements that the publications refer to. For aim 2, information on the models and elements of the implemented integrated care programmes are described.

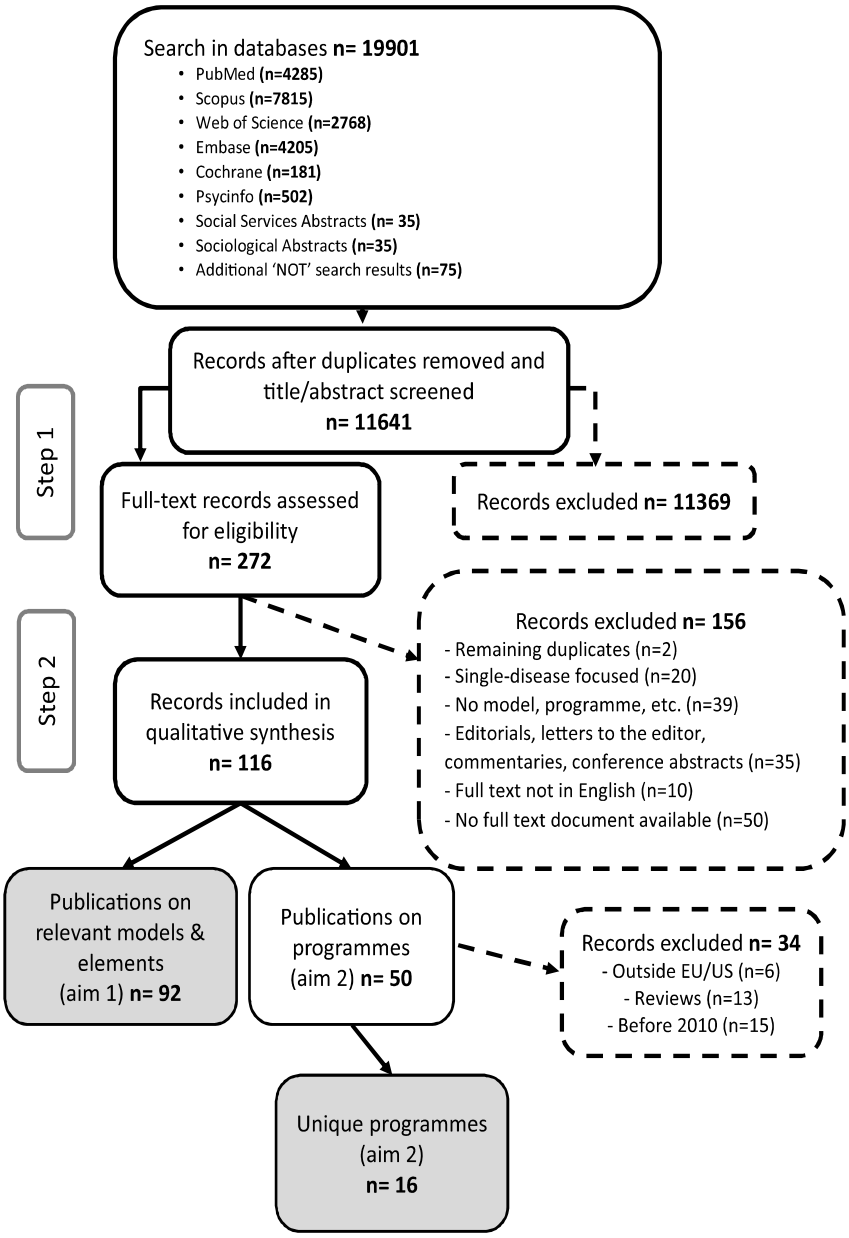

Fig. 4.1: Flow diagram of scoping review in- and exclusion process

3. Results

3.1. General description

Our literature search yielded 19,901 potentially relevant publications. After removing duplicates 11,641 publications were screened on the basis of title and abstract (step 1). 272 articles were selected for an in-depth full text screening (step 2). Most articles were excluded between step 1 and 2 because they did not include a model, element, or programme, were not multi-morbidity focused, or a full text was not available. The screening process resulted in 116 unique publications for inclusion in our data extraction: 92 for aim 1 (relevant models and elements) and 50 for aim 2 (programmes) (e.g. 26 publications were included for both aim 1 & 2). 16 programmes from Europe and the US were finally included for aim 2. The in- and exclusion process is depicted in Fig. 1.

4. Aim 1: identify relevant models and elements for integrated care especially for multi-morbidity

4.1. Study characteristics

Of the 92 publications, 73 were qualitative and 19 were quantitative studies. Among the qualitative studies, reviews were most common (n = 31), followed by descriptions or developments of models and frameworks (n = 14) and case studies (n = 9). Eight of the 20 quantitative publications were randomised clinical trials, six non-randomised trials or quasi-experimental studies and three cross-sectional studies.

The majority (n = 47) of the 92 publications focused on multi- morbid persons in general, without any specification of the morbidities. The publication years ranged from 1996 to 2015, and the mean publication year was 2011. The 92 publications were mainly published in Europe (n = 38) and the US (n = 33).

4.2. Models of integrated care for multi-morbidity

Across the 92 publications, 30 different models were mentioned, applied or recommended. Almost all of these 30 models were only referenced by one publication identified in our review. An overview of the theories and models is presented in the Appendix (File 2, Table 1).

31 of the 92 publications referred to the Chronic Care Model (CCM) proposed by Wagner et al. (1996) [117,118]. The CCM suggests that comprehensive care programmes for chronically ill patients ideally comprise six key elements. Four of these elements refer to the actual delivery of care by health care providers: [1] self-management support that helps patients and their families to obtain skills and confidence to manage their chronic condition (e.g. provision health education programmes that encourage behavioural changes), [2] delivery system design that ensures delivery of effective,

efficient patient care through e.g. involvement of all members of the multidisciplinary team, clear leadership and regular follow-up, [3] decision support based on evidence-based guidelines providing clinical standards for high quality chronic care, and development of [4] clinical information systems that supply care teams with feedback, reminders and individual and population-based information for care planning. The two remaining and interlinked elements refer to the context or setting in which chronic care is provided, namely: [5] the health care system that provides the organisational context in which chronic care is provided and encompasses the aforementioned components. According to the CCM, a health care system that endorses improvement of the quality of care must be well-organised, motivated and prepared to change and furthermore should be linked to [6] community resources and policies. The health care system is embedded in the community, which includes organisations and programmes that may support continuity of care or expand a health care system's care for chronically ill patients.

Six publications referred to the Guided Care Model (GCM) [119]. The GCM is a proactive, comprehensive model of care for people with multiple chronic conditions. The model combines successful innovations in chronic care and elements of the CCM with primary care. Its aim is to improve the quality of care, patients' access to care, and their capacity for selfcare [27]. The model builds on the CCM, and contains eight elements: [1] comprehensive assessment and planning care, [2] individual care planning, [3] monitoring, [4] coaching, [5] chronic disease self-management, [6] educating and supporting caregivers, [7] coordinating transitions between providers and sites of care, and [8] access to community services [119].

Only few models have a focus on integrated care specifically for multi-morbid persons. These include a multidisciplinary, person-centred, integrated and coordinated model of care described by

Roughead et al. [52]. The model places the multi-morbid person and their care providers in the inner circle at the centre of care. An integrated primary care network, including the general practitioner, a pharmacist, related health practitioner, home and community care providers, is placed in the middle care circle. A care coordinator is nominated, which can be any of the providers involved in the care provision of the middle care circle. The third and outer circle represents the secondary and tertiary care network, which is integrated into the care process by the providers involved in the middle care circle. Information sharing (e.g. case conferences) among the providers involved across all care circles is an essential part of the model [52].

Muth et al. [33] developed the Ariadne principles, which focus on decision making for multi-morbidity during primary care consultations [34]. According to the Ariadne principles, the primary care process starts with a holistic assessment, followed by a prioritisation of health problems, where

patient's preferences are taken into account. At the centre of the Ariadne principles are realistic treatment goals, shared by the physician and multi-morbid patient, referred to as individualised management. The assessment of potential interaction of diseases, treatment and multiple medications is another step in the care process according to the Ariadne principles. As care processes of multi-morbid patients are usually not sequential, and patient's needs and preferences might change over time, a re-assessment of the patient's goal attainment is conducted during planned visits [34].

Sampalli et al. [53] proposed an integrated model of care to improve the health outcomes of individuals with multi-morbidity in a hospital, with integrated and coordinated care modules. The model is based on concepts from the CCM and relevant concepts from other care models (e.g. the salutogenic model, the Canadian model of integrated care). The model proposes that care should be provided by a multidisciplinary team to address the patient's needs with a non-disease-specific approach. The multidisciplinary team can comprises physicians, nurses, occupational therapists, a psychologist, a psychotherapist, and a clinical dietician. The model has four essential phases: (i) intake, (ii) integrated care, (iii) transition, and (iv) discharge from hospital to family physician. During the (i) intake phase, a comprehensive and multidisciplinary assessment is conducted to gain a comprehensive knowledge of the individual with multi-morbidity and his or her environment. The (ii) integrated care phase, consisting of treatment, education and support for integration of the individual patient's needs, can vary in duration depending on the individual patient's condition and needs. During the (iii) transition phase, the patient's discharge readiness is assessed by the multidisciplinary team and a self-management plan is developed together with the multi-morbid patient. The final (iv) discharge phase involves the transition to the responsible care provider (e.g. family physician), considers the community supports available and includes follow-up discharge care [53].

4.3. Elements of integrated care for multi-morbidity

Different elements of integrated care for multi-morbidity can be identified from the literature. To group the elements, we structured the collection into eight components, two pertaining to the multi-morbid person and his/her environment and six corresponding the WHO health system building blocks that are widely used to describe, understand, and compare different health systems (service delivery, leadership & governance, workforce, financing, technology & medical products, information & research). More detailed information on the six WHO health system building blocks, including which elements fit into one component of the framework are provided in Leijten et al. [120]. The elements identified in the literature are presented in Table 4.2, but only those mentioned in at least 10 publications are described.

	N	*Authors*
Study design		
Qualitative	73	
Expert discussion paper	1	Bayliss et al. [28].
Focus group	6	Liddy et al. [29]. Smith et al. [30]. Corser and Dontje [31]. Luijks et al. [32]. Lalonde et al. [33]. Muth et al. [34].
Interviews	8	Bayliss et al. [35]. Loeb et al. [36]. Ridgeway et al. [37]. Coventry et al. [38]. Summer Meranius et al. [39]. Knowles et al. [40]. Hjelm et al. [41]. Müller-Staub et al. [42].
Review	33	Piette et al. [43]. Smith et al. [44]. Kodner [45]. Boult et al. [46]. Boyd et al. [47]. Pielawa et al. [48]. Singer et al. [49]. Beland et al. [50]. Calciolari et al. [51]. Roughead et al. [52]. Sampalli et al. [53]. Alfaro Lara et al. [54]. France et al. [19]. Roberts et al. [55]. de Bruin et al. [23]. Smith et al. [21]. American Geriatrics Society Expert Panel on the Care of Older Adults [56]. Dubuc et al. [57]. Zulman et al. [58]. Morello et al. [59]. van Houdt et al. [60]. Yardley et al. [61]. Boyd et al. [62]. Hong et al. [63]. Ivbijaro et al. [64]. Uhlig et al. [65]. Lefevre et al. [66]. Haibach et al. [67]. Yardley et al. [68]. Stokes et al. [69]. Pietrantonio et al. [70]. Kadu et al. [71]. Morgan et al. [72].
Case study	9	Eng et al. [73]. Hébert et al. [74]. Dorr et al. [75]. Silver et al. [76]. Thiem et al. [77]. Berry et al. [78]. Morrin et al. [79]. Oni et al. [80]. Park et al. [81].
Model/framework description or development	14	Lorig [82]. Yarmo-Roberts et al. [83]. Boyd et al. [84]. Soubhi et al. [85]. Parekh et al.[86]. Corser [87]. Kernick et al. [88]. Tanio and Chen [89]. Tracy et al. [90]. Reeve et al. [91]. Grant et al. [92]. Wu et al. [93]. Findley [94]. Amblas-Novellas et al. [95].
Vignettes	2	Hamberger and Hindman [96]. Fortin et al. [97].
Quantitative	19	
Randomised Clinical Trial (RCT)	8	Bernabei et al. [98]. Melis et al. [99]. Muntinga et al. [100]. Allen et al. [101]. Harris et al. [102]. Spoorenberg et al. [103]. Lin et al. [104]. Coventry et al. [105].
Longitudinal study	2	Chan et al. [106]. Martin et al. [107].
Cross-sectional study	4	Landi et al. [108]. Petersen et al. [109]. Doos et al. [110]. Laux et al. [111].
Observational study	1	Roland et al. [112].
Non-randomised trial, quasi experimental	4	Beland et al., [113]. Bird et al. [114]. Boyd et al. [115]. Fortin et al. [116].
	N	*Authors*
Target group		
General multi-morbidity	44	Hamberger and Hindman [96]. Yarmo-Roberts et al. [83]. Smith et al. [21]. Dorr et al. [75]. Bayliss et al. [35]. Laux et al. [111]. Boyd et al. [115]; Soubhi et al. [85]. Corser et al. [87]. Parekh et al. [86]. Corser et al. [87]. Roughead et al. [52]. Sampalli et al. [53]. Singer et al. [49]. Smith et al. [21]. Chan et al. [106]. Bruin et al. [23]. Alfaro Lara et al. [54]. Kernick et al. [88]. Lalonde et al. [33]. Martin et al. [107]. Alfaro Lara et al. [54]. France et al. [19]. Morello et al. [59]. Fortin et al. [116]. Grant et al. [92]. Harris et al. [102]. Reeve et al. [91]. Van Houdt et al. [60]. Yardley et al. [68]. Zulman et al. [58]. Berry et al. [78]. Morrin et al. [79]. Findley [94]. Uhlig et al. [65]. Lefevre et al. [66]. Ridgeway [37]. Muth et al. [34]. Oni et al. [80]. Coventry et al. [105]. Hong et al. [63]. Yardley et al. [68]. Pietrantonio et al. [70]. Kadu et al. [71]. Stokes et al. [69].
Specific combination of morbidities	12	Piette et al. [43]. Fortin et al. [116]. Roberts et al. [83]. Doos et al. [110]. Ivbijaro et al. [64]. Haibach et al. [67]. Lin et al. [114]. Wu et al. [93]. Boyd et al. [115]. Coventry et al. [105]. Knowles et

		al. [40]. Morgan et al. [72].
Frail elderly	32	Lorig [82]. Eng et al. [73]. Bernabei et al. [98]. Landi et al. [108]. Hebert et al. 2003. Melis et al. [99]. Beland et al. [113]. Kodner [45]. Bird et al. [114]. Boyd et al., 2007. Bayliss et al. 2008. Boyd et al. [115]. Liddy et al. [29]. Boult et al. [46]. Beland et al. [113]. Silver et al. [76]. Thiem et al. [77]. Calciolari et al. [51]. Pielawa et al. [48]. American Geriatrics Society Expert Panel on the Care of Older Adults [56]. Allen et al. [101]. Muntinga et al. [100]. Roland et al. [112]. Dubuc et al. [57]. Spoorenberg et al. [103]. Tanio and Chen [89]. Tracy et al. [90]. Looman et al. 2013. Park et al. [81]. Petersen et al. [109]. Summer Meranius et al. [39]. Amblas-Novellas et al. [95].
Informal carers	1	Hjelm et al. [41].
Health care professional	3	Smith et al. [21]. Loeb et al. [36]. Luijks et al. [32].

Table 4.1: Study characterisitics in papers on relevant models and elements

Overall, most elements were identified in the service delivery (n = 10), information & research (n = 4), and leadership & governance components (n = 4). Elements relating to the other components were less frequently mentioned in the literature; this was especially the case regarding financing. More detail on observations for each component is provided below.

4.3.1. Multi-morbid person & his/her environment

The element that is mentioned most frequently (n = 61) in our scoping review, is person-centred care, e.g. in two-thirds of publications. Most commonly it pertained to a shift from disease-centred care to a person-centred care approach, which takes individual preferences, perceptions and needs into account. A holistic assessment of a patient's needs and preferences to determine which type of care is needed was also often referred to as an essential part of integrated care (n = 54). The elements community- and social resources (e.g. in form of community health teams or home care services) and support (e.g. from family caregivers) of the person with multi-morbidity (n = 20) were mentioned much less frequently in the literature.

4.3.2. Service delivery

As many articles described elements relating specifically to the care process, most elements identified belong to the service delivery component. For example integration and coordination of care (n = 52), across health and social care sectors or among different disciplines of providers is described. Self-management (n = 40) was often referring to supporting the skills of the patient (e.g. development of skills to better manage his/her diseases) or the ability of professionals to train self-management.

Relevant elements	Number of times referenced. Total *n = 92*
Multi-morbid person	
Person-centred care	61
Holistic or comprehensive needs assessment	54
Environment	
Community services/community resources, social network/social care	20
Service delivery	
Integration and coordination of care services and/or professionals	52
Self-management (engaging and activating the patient, patient education)	41
Continuity of care	31
Informal caregivers	30
Single point of entry	23
Prioritization of patients and providers preferences	21
Health promotion/preventive actions/proactive prevention activities	21
Avoidance of guideline interaction	19
Polypharmacy management	16
Leadership & governance	
Shared decision making/joint goal setting/participatory approach	29
Case management/case manager/care manager	24
Individual care plan	24
Performance-based assessment/management or care outcomes	20
Workforce	
Collaboration	47
Staff training & education	33
Improve provider-patient relationship/communication	21
Financing	
Financing system/reimbursement/cost effective care/financial incentives	10
Information & research Risk stratification	21
Evaluation or additional research	16
Technology & medical products	
Information sharing/interoperable (systems)	27
Monitoring	26

Table 4.2: Elements per component

Continuity of care (n = 31) was described as a key to successful integrated care as it facilitates networking among professionals and a good quality of care over time. Several publications considered the involvement of informal caregivers (n = 30) as relevant in the overall care process or in particular during decision making.

4.3.3. Leadership & governance

The importance of involving patients and other care givers in shared decision-making was highlighted in every third publication, e.g. in 31 of the 92 articles. This was often described as a process where the patient gradually becomes more involved as a serious decision-partner in the care process in order to improve care outcomes and experiences with the care process. To optimize the processes of care across different professionals, case management was often proposed, as well as the development of an individual care plan according to patient's preferences (each n=24). Another element mentioned commonly was the use of performance-based assessment/management or the measurement of care outcomes (n = 20) on all levels.

4.3.4. Workforce

In the workforce component the elements of collaboration between health care providers and organisations as well as across sectors (n=47) and staff training (e.g. in communication skills, teamwork, and case management) (n = 33) were frequently referred to. Another element often mentioned was the improvement of the provider-patient relationship (n = 21). This can, for example, pertain to further professional development in communication training to improve e.g. the respectful interaction between the patient and care professional, which in turn may be a prerequisite for successful shared decision-making.

4.3.5. Financing

Factors related to the financing component were least frequently (n = 10) found. Ten publications, e.g. only one in nine, referred to the cost effectiveness of care, financial incentives for providers or patients or the reimbursement systems, which for example considered the additional time professionals spend with a multi-morbid patient.

4.3.6. Technology & medical products

Risk stratification was mentioned in a considerable number of publications (n=21) and often described as an algorithm implemented in an (ICT-) tool to identify persons with multi-morbidity or to stratify them according to their level of disease complexity. Another element described and recommended in the literature was an evaluation of or additional research on the integrated care approach (n = 16).

4.3.7. Information & research

An information sharing system or an interoperable system with the purpose to exchange information between professionals, patients, and informal caregivers and thereby optimize the care process were described as relevant in several publications (n = 27). Monitoring was frequently mentioned across the identified publications (n=26), but with different functions, such as monitoring of care plans, clinical indicators, patient satisfaction, or as a tool for performance-based management.

5. Aim 2: models and elements applied in integrated care programmes for multi-morbidity

5.1. Study characteristics and target population

Altogether 50 publications on integrated care programmes for multi-morbidity were found; they described 16 unique US or European programmes of recent date (published in or after 2010).

Of the 16 programmes described in more detail below, eleven are from Europe (the Netherlands-4, Germany-3, UK-2, Switzerland-1, Sweden-1) and five from the US. Three of the programmes target general multi-morbidity, ten frail elderly and three a specific combination of diseases (Table 4.3).

					Key elements													
					Elements of CCM						Elements of GCM							
Programme name	**Author, Year, Country**	**Target population**	**Study Design**	**Theories, models or programmes referred to**	1. self-management support	2. Delivery system design	3. Decision support	4. Clinical information systems	5. The health care system	6. Community resources and policies	1. Comprehensive assessment	2. Planing care	3. Monitoring	4. Coaching	5. Chronic disease Self-management	6. Educating and supporting care-givers	7. Coordinating transitions	8. Access to community care services
Programmes in the EU (n=11)																		
Multi-disciplinary integrated care intervention	Boorsma et al. [121] , NL	Frail elderly	RCT	Disease management model, Model of multi-disciplinary integrated care			x	x		x	x	x	x		x		x	
					No additional elements													
National Care for the Elderly pro-gramme	Fabbricotti et al. [123] , NL	Frail elderly	Quasi experimental design	-				x	x	x	x	x						
					Additional elements: single entry point, steering group, task specialization and delegation.													
Frail older Adults: Care in Transition	Muntinga et al. [33] , NL	Frail elderly	Cluster RCT	Wagner's CCM			x	x			x			x	x		x	
					Additional element: strong management by expert geriatric teams.													
Poly-pharmacy Intervention Limburg	Muth et al. [33] , NL	Frail elderly	Multi method study	Wagner's CCM				x		x								
					Additional element: Patient's medication review.													
Primary care practice-based care management for chronically ill patients	Muth et al. [33], DE	General multi-morbidity	Multi method study	Wagner's CCM			x	x					x		x			
					Additional elements: single point of entry, prevention of future hospitalizations.													

Table 4.3: Characteristics of implemented programmes (n=16).

					Key elements													
					Elements of CCM						**Elements of GCM**							
Programme name	**Author, Year, Country**	**Target population**	**Study Design**	**Theories, models or programmes referred to**	1. self-management support	2. Delivery system design	3. Decision support	4. Clinical information systems	5. The health care system	6. Community resources and policies	1. Comprehensive assessment	2. Planing care	3. Monitoring	4. Coaching	5. Chronic disease Self-management	6. Educating and supporting care-givers	7. Coordinating transitions	8. Access to community care services
Sepsis survivors monitoring and coordination in outpatient health care	Muth et al. [33], DE	Specific morbidity combination	Multi method study	Wagner's CCM			x	x	x				x	x	x			
					No additional elements.													
Prioritising multi-medication in multi-morbid patients	Muth et al. [33] , DE	Frail elderly	Multi method study	Wagner's CCM			x	x	x						x			
					Additional element: shared decision making.													
Six case management demonstration sites	Roland et al. [111] , UK	Frail elderly	Observational study	Wagner's CCM			x	x	x	x					x			
					Additional element: prevention of emergency admissions to hospital.													
The Collaborative Interven-tions for Circulation and Depression trial	Coventry et al. [37] , Knowles et al. [39] , 2015, UK	Specific morbidity combination	RCT, Interview	Collaborative care for patients with moder-ate to severe depres-sion trial; Collaborative care model, Wagner's CCM			x	x			x			x	x	x		
					Additional element: proactive treatment.													

Table 4.3: continued

					Key elements													
					Elements of CCM						Elements of GCM							
Programme name	**Author, Year, Country**	**Target population**	**Study Design**	**Theories, models or programmes referred to**	1. self-management support	2. Delivery system design	3. Decision support	4. Clinical information systems	5. The health care system	6. Community resources and policies	1. Comprehensive assessment	2. Planing care	3. Monitoring	4. Coaching	5. Chronic disease Self-management	6. Educating and supporting care-givers	7. Coordinating transitions	8. Access to community care services
Leben mit mehreren Langzeit-erkrank-ungen	Müller-Staub et al. [41] , CH	General multi-morbidity	Grounded theory and qualitative interviews	-			x	x			x			x	x			
					Additional element: shared decision making													
Blekinge case management interven-tion	Hjelm et al. [40] , SE	General multi-morbidity	In depth interviews	-		x		x			x	x					x	
					Additional element: involvement of informal care.													
Sum of no. of elements Programmes in the USA (n = 5)					0	1	8	11	4	4	6	3	3	4	8	1	3	0
The promoting effective advanced care for Elders	Allen et al. [100]	Frail elderly	Pilot study	PASS-PORT, Wagner's CCM	x	x	x	x	x	x	x				x			
					No additional elements.													
The programme of All Inclusive care for the Elderly	Bloom et al. Meret-Hanke, 2011, [124,125]	Frail elderly	Programme description	Wagner's CCM		x	x	x	x			x	x		x			
					Additional element: preventive care.													

Table 4.3: continued

					Key elements													
					Elements of CCM						Elements of GCM							
Programme name	**Author, Year, Country**	**Target population**	**Study Design**	**Theories, models or programmes referred to**	1. self-management support	2. Delivery system design	3. Decision support	4. Clinical information systems	5. The health care system	6. Community resources and policies	1. Comprehensive assessment	2. Planing care	3. Monitoring	4. Coaching	5. Chronic disease Self-management	6. Educating and supporting caregivers	7. Coordinating transitions	8. Access to community care services
Geriatric Resources for Assessment and Care of Elders	Bielaszka-DuVernay 2011 [126]	Frail elderly	Programme description	-			x	x	x	x	x	x	x		x		x	
					Additional elements: transportation, continuity of care, home visits.													
TEAMcare	Katon et al. [127] . Von Korff et al. [128] . Lin et al. [103]	Specific morbidity combination	Descriptive intervention design; RCT; RCT	Wagner's CCM			x	x	x	x	x	x	x	x	x			
					Additional elements: shared goal-setting, proactive patient care.													
ChenMed Model	Tanio and Chen 2013 [88]	Frail elderly	Programme description	-				x	x	x				x		x		
					Additional elements: transportation, more physician-patient time.													
Sum of no. of elements					1	2	4	5	5	4	3	3	3	2	4	1	1	0

Table 4.3: continued

5.2. Models used in integrated care programmes for multi-morbidity

Of the 16 integrated care programmes for multi-morbidity operable in the EU and the US, the majority referred to the CCM (n = 10). A few programmes (n = 4) additionally referred to other models (n = 3) and/or to previous programmes (n = 2). The other models referred to were the Disease Management Model [121,122], the Model of Multidisciplinary Integrated Care [122], and the Collaborative Care Model [40].

The single disease focussed Disease Management Model to improve the health and quality of life of chronically ill persons comprises three key elements: [1] monitoring of disabilities, [2] coordination of care and [3] patient empowerment [122]. The Model of Multidisciplinary Integrated Care is inspired by the Disease Management Model and comprises five elements: [1] continuity of care, [2] patient centeredness, [3] generating multi-dimensional health data, [4] training of professionals, and [5] a shared disease management plan. This model focusses on persons with multi-morbidity and the identification and monitoring of the functional disabilities caused by chronic diseases [122]. The Collaborative Care Model, which is based on the CCM, is an evidence based approach that aims to integrate mental and physical health care by reorganising treatment and care delivery (e.g. collaboration of different care providers, including mental care services). Furthermore, the model focuses on the importance of monitoring a patient's progress [40].

For five programmes, there was no reference to any model or any other integrated care programme (Table 4.3).

5.3. Elements used in integrated care programmes for multi-morbidity

The publications about the integrated care programmes for multi-morbidity in the EU and US referred to between 4 and 11 elements. Overall, integrated care programmes most often referred to interdisciplinary care or collaboration (n = 13), followed by self- management (n = 12), the use of an electronic information system (n = 10) and the two elements assessment (n = 9) and person-centred care (n = 9).

Table 3 lists the elements included in each individual programme. While a range of identified integrated care programmes referred to the CCM, most of these programmes did not apply all six elements of the CCM. To be more specific, among the ten programmes referring to the CCM, 4 used two, 2 three, 3 four, 0 five, and only 1 all six elements (Table 3).

With respect to the CCM, the focus was predominantly on elements referring to the actual delivery of care, as programmes most often included elements related to delivery system design (e.g. case

manager, working in multi- or inter-disciplinary teams, care plans), self-management support (e.g. education, coaching, empowerment), and clinical information systems (e.g. electronic information exchange, computerized alerts, web-based information systems). On the other hand, elements related to decision support (e.g. evidence based guidelines, standards) and health care system and community & resources were less often reported on.

None of the identified integrated care programmes referred to the GCM, however elements belonging to the GCM could be identified among the programmes. Integrated care programmes most often included the following five elements that can be related to the GCM: comprehensive assessment, monitoring, planning care, chronic disease self-management, and coordinating between providers and sites of care. The elements prevention or proactive care and shared decision making were reported frequently by the programmes, but neither explicitly belong to the CCM or GCM.

6. Discussion

The current scoping review summarises information, evidence and research about relevant models and elements of integrated care for multi-morbidity. Moreover, an overview is provided on which models and elements are in turn applied in recent integrated care programmes for multi-morbid persons in the EU and the US. Although a wide variety of literature is available on integrated care, this is mostly single-disease focused. In contrast to other thematically related reviews in the current literature (e.g. [10, 23, 11, 122, 128–130, 134]), our scoping review does not primarily focus on one specific outcome (e.g. cost-effectiveness) or intervention (e.g. case management), but more comprehensively on models and elements relevant in the context of integrated care for multi-morbid persons. Whereas the reviews conducted by de Bruin et al. and Hopman et al. focus on the effectiveness regarding the improvement of specific outcomes and the available evidence, we were instead interested in the elements and models included, thus applied a more qualitative and descriptive approach.

We conducted a scoping review of 92 publications pertaining to models and elements and 50 publications pertaining to programmes. Although the focus of our research question was on multi-morbidity, the majority of included publications described integrated care models that were not specifically developed for, but still applied to, multi-morbidity. With respect to the CCM, the results of this scoping review are comparable to those of de Bruin et al. [23] and Hopman et al. [134] as the programmes we identified also mainly focussed on the CCM elements ‘delivery system design’ and ‘self-management support’. However, unlike de Bruin et al. [23] and Hopman et al. [134] we also found that the majority of the identified programmes focussed on the CCM element ‘clinical

information systems'. More research is needed to determine the effectiveness for both the CCM and GCM, especially for multi- morbid persons [22–23, 131]. Models focussing on multi-morbidity mostly described particular elements of the care process, specific challenges related to multi-morbidity, or an adaptable approach to meet the needs of persons with multi-morbidity [34, 52–53, 132].

Overall, most elements of integrated care in multi-morbidity identified in the scientific literature pertain to the WHO health systems-components service delivery, information & research, leadership & governance and workforce. Elements relating to the person's environment, financing and technology & medical products components were less frequently found in the scientific literature. This may point to important gaps in scientific literature of elements that may be important for policymakers and those implementing integrated care programmes. For example, information and evidence on financing mechanisms that can strengthen care integration and at the same time control or save cost will be needed if programmes are to be sustainable or to be adopted more widely. Another example is the use of eHealth, which is believed to have great potential to improve integrated care for multi-morbid individuals, but has received only limited attention in scientific literature related to multi-morbidity (cf. [58, 133]).

Some elements from theoretical models have been widely applied in the analysed programmes, while others have hardly found their way into practice. This could be explained by the insufficient evidence base for the effectiveness of various methods in the care of persons with multi-morbidity [23, 134]. Moreover, there may be practical reasons to not include additional features. For example, time or budget constraints may prevent the use of special training measures for professionals, which are part of the CCM.

The five elements (person-centred care, holistic assessment, self-management, integration and coordination of services and collaboration) identified most often in the literature seem to be key as they were also among the most frequently mentioned elements of the identified programmes. Moreover, the use of an electronic information system and the training or education of staff was repeatedly reported among the implemented programmes. Elements that are not part of the CCM or GCM, but are frequently mentioned in publications on programmes include prevention or proactive care, shared decision-making, and polypharmacy management. However, drawing firm conclusions on their relative importance is hampered by a low quality of evaluation studies as of yet [23, 134].

The elements deemed relevant for integrated care were determined inductively and new elements were added throughout the reviewing process. However, we cannot conclude that this is a complete

or finite list of elements. Furthermore, we stress that although some elements appeared more often in the literature than others, these are not necessarily more important – some are simply broader or higher level concepts. For this reason we have refrained from making statements weighing these elements. Moreover, it should be noted that elements from the literature focusing on integrated care in general can be useful for the care specific to multi-morbid persons, but the higher complexity of the latter likely requires adaptation of these elements. An integrated care approach specifically for multi-morbidity requires that integration and coordination of care go beyond the traditional single-disease focus. The scope of such a care approach needs to be sufficiently flexible to, for example, include polypharmacy management and prioritisation of treatment goals. Furthermore, the analysed models mostly focus on the micro and meso-level context and do not discuss the macro environment the programmes operate in. However, supportive macro level policies and financing systems are crucial conditions for the implementation and eventual success of such programmes. Hence, further research in this respect would be needed.

6.1. Limitations

Our search strategy included only publications from scientific databases and thus potentially relevant grey literature was not included in the review. In addition, the search strategy was very broad and targeted for elements described as part of integrated care programmes, but not for research done on individual elements per se. This means that relevant research focusing on individual elements may not have been found. Furthermore, we did not assess the methodological quality of the studies other than extracting their study designs. A quality assessment would not have been possible given the variety of studies, including programme descriptions and reviews. This means that only counting how often an element is mentioned in these papers does not necessarily reflect the quality of research with regard to these elements or their relative importance, only that they are often studied and mentioned in the context of integrated care for people with multi-morbidity.

7. Conclusion

Most models and elements that could be found in the literature focus on integrated care in general and were originally developed and used for a single disease focus. However, a multitude of elements relevant for integrated care for multi-morbid persons were identified both in the literature and in integrated care programmes that are operable in the US or EU. Together, this may provide key insights and priorities for future research in the field. Likewise, the majority of integrated care programmes for multi-morbidity are based on more general models for integrated care for chronic

diseases. This leads us to conclude that a comprehensive model that better accounts for the complexities resulting from multi-morbidity is needed. Such a model would have to go beyond a single disease focus and better capture such multi-morbidity-specific elements as dealing with multiple care providers, information sharing, treatment interaction, payments that adequately account for multi-morbidity and flexibility in the application of single disease guidelines. Moreover, elements addressing the experiences, needs and preferences of persons with multi-morbidity should be addressed, while a more person centred care model is co-produced together with the person concerned. Lastly, more attention to the macro-level environment and its policies could improve the effectiveness of newly designed integrated care programmes and better forecast their applicability, feasibility and success in a given setting. Within the context of the SELFIE project described in Box 3, we have used the results of this scoping review to create such a comprehensive conceptual framework of integrated care in multi-morbidity [120].

8. Appendix Kapitel 4

File 1: Full search strategies

PubMed – October 8th, 2015 / *tiab = Title or Abstract, Mesh = Indexed term.

((“Models, Organisational”[MesH]) OR (theor*[tiab] OR concept*[tiab] OR framework*[tiab] OR model*[tiab] OR programme*[tiab] OR approach*[tiab])) **AND** ((clinical pathway*[tiab] OR care pathway*[tiab] OR critical path*[tiab]) OR (“vertical integration”[tiab] OR “virtual integration”[tiab] OR “physician system integration”[tiab] OR “provider system integration”[tiab] OR “functional integration”[tiab] OR “horizontal integration”[tiab] OR “clinical integration”[tiab]) OR “case management”[MeSH] OR “delivery of health care, integrated”[MeSH] OR “disease management”[MeSH] OR “patient care management”[MeSH] OR “patient-centred care”[MeSH] OR “accountable care organisations”[tiab] OR “continuity of patient care”[tiab] OR “case management”[tiab] OR “comprehensive health care”[tiab] OR “delivery of health care, integrated”[tiab] OR “managed care programmes”[tiab] OR “patient-centred care”[tiab]) OR (“care delivery”[tiab] OR “integrated care”[tiab] OR “comprehensive care”[tiab] OR “care coordination”[tiab] OR “managed care”[tiab] OR “accountable care 92o-occur92ion”[tiab] OR “accountable care organisations”[tiab] OR “accountable care organisation”[tiab] OR “accountable care organisations”[tiab] OR “collaborative care”[tiab] OR “disease management”[tiab] OR casemanagement[tiab] OR “case-management”[tiab] OR “case management”[tiab] OR “shared care”[tiab] OR “accountable care”[tiab] OR “patient-centred”[tiab] OR “patient centred”[tiab] OR “person-centred”[tiab] OR “person centred”[tiab] OR “multidisciplinary care”[tiab] OR “interdisciplinary care”[tiab] OR “inter-disciplinary care”[tiab] OR “crossdisciplinary care”[tiab] OR “cross-disciplinary care”[tiab] OR “multiple interventions”[tiab] OR “care chain”[tiab] OR “care chains”[tiab] OR “care continuity”[tiab] OR “care continuation”[tiab] OR “care transition”[tiab] OR “care transitions”[tiab] OR “chain of care”[tiab] OR “chains of care”[tiab] OR “continuity of care”[tiab] OR “cross sectoral care”[tiab] OR “delivery of health care integrated”[tiab] OR “integrated medicine”[tiab] OR “integrated social network”[tiab] OR “integrated social networks”[tiab] OR “integration of care”[tiab] OR “intersectoral care”[tiab] OR “intrasectoral care”[tiab] OR “linked care”[tiab] OR “management model”[tiab] OR “patient care management”[tiab] OR “seamless care”[tiab] OR “service network”[tiab] OR “service networks”[tiab] OR “transition of care”[tiab] OR “transitional care”[tiab] OR “transmural care”[tiab] OR “whole system thinking”[tiab] OR “holistic care”[tiab])) **AND** (((frailty[tiab] OR frail elder*[tiab] OR frail older adult*[tiab]) OR ((92o-occur*[tiab] OR co-occur*[tiab] OR co occur*[tiab]) AND (health problem*[tiab] OR health condition*[tiab] OR chronic health problem*[tiab] OR Chronic disease*[tiab] OR Chronic condition*[tiab] OR chronic illness*[tiab] OR chronic disorder*[tiab])) OR (complex need*[tiab] OR complex condition*[tiab]) OR (multiple health problem*[tiab] OR multiple health condition*[tiab] OR multiple chronic condition*[tiab] OR multiple chronic disease*[tiab] OR multiple chronic disorder*[tiab] OR multiple chronic health problem*[tiab] OR multiple chronic illness*[tiab]) OR (multimorbid*[tiab] OR multi-morbid*[tiab] OR multi morbid*[tiab])) OR (comorbidity[MeSH] OR “frail elderly”[MeSH])) **AND** (Humans[Mesh])

Scopus - October 28th, 2015 / * TITLE = title, ABS = abstract, KEY = keywords.

(TITLE-ABS-KEY (theor* OR concept* OR framework* OR model* OR programme* OR approach* OR “concept formation” OR “conceptual framework” OR “health care programme”)) **AND** (TITLE-ABS-KEY (“care delivery” OR “integrated care” OR “comprehensive care” OR “care coordination” OR “managed care” OR “accountable care 92o-occur92ion” OR “accountable care organisations” OR “accountable care organisation” OR “accountable care organisations” OR “collaborative care” OR “disease management” OR casemanagement OR “case-management” OR “case management” OR “shared care” OR “accountable care” OR (patient W/1 cent*) OR (person W/1 cent*) OR (multi W/1 disciplin* W/1 care) OR (multidiscipl* W/1 care) OR (inter W/1 disciplin* W/1 care) OR (interdiscipl* W/1 care) OR (cross W/1 disciplin* W/1 care) OR (crossdisciplin* W/1 care) OR (92o-occur W/1 intervent*) OR (care W/1 chain*) OR (care W/1 continuit*) OR (care W/1 transition*) OR (chain* W/1 “of care”) OR “continuity of care” OR “cross sectoral care” OR “delivery of health care integrated” OR “integrated medicine” OR (integrated W/1 social W/1 network*) OR “integration of care” OR “intersectoral care” OR “intrasectoral care” OR “linked care” OR “management model” OR “patient care management” OR “patient-centred care” OR “seamless care” OR (service W/1 network*) OR “transition of care” OR “transitional care” OR “transmural care” OR “whole system thinking” OR “holistic care” OR “health care delivery” OR “integrated health care system” OR “managed care” OR “managed care organisation” OR

“accountable care organisation” OR “disease management” OR “case management” OR “patient care” OR “holistic care” OR ((vertical OR virtual OR “physician system” OR “provider system” OR functional OR horizontal OR clinical) W/1 integration) OR ((clinical OR care OR critical) W/1 path*))) **AND** (TITLE-ABS-KEY(multimorbid* OR (multi W/1 morbid*) OR (“multiple chronic” W/1 (condition* OR disease* OR disorder* OR “health problem” OR “health problems” OR illness*)) OR (“multiple health” W/1 (problem* OR condition*)) OR (complex W/1 (condition* OR need*)) OR ((93o-occur* OR “co occurring” OR “co occurrent” OR “co occurrence”) W/1 “chronic health” W/1 problem*) OR ((93o-occur* OR “co occurring” OR “co occurrent” OR “co occurrence”) W/1 disorder*) OR ((93o-occur* OR “co occurring” OR “co occurrent” OR “co occurrence”) W/1 health W/1 problem*) OR ((93o-occur* OR “co occurring” OR “co occurrent” OR “co occurrence”) W/1 chronic W/1 (disease* OR condition* OR illness)) OR frailty OR (frail W/1 elder*) OR ((frail W/1 older) AND adult) OR ((frail W/1 older) AND adults)) OR (KEY(comorbid*) OR (co W/1 mobid*)))

Embase – October 7th, 2015 / * ab,ti = abstract title, ‘ ’ = Indexed terms – ‘Emtree’ terms, without ‘explosion’ (/de)

(theor*:ab,ti OR concept*:ab,ti OR framework*:ab,ti OR model*:ab,ti OR programme*:ab,ti OR approach*:ab,ti OR ‘concept formation’/de OR ‘conceptual framework’/de OR ‘health care programme’/de) **AND** (‘care delivery’:ab,ti OR ‘integrated care’:ab,ti OR ‘comprehensive care’:ab,ti OR ‘care coordination’:ab,ti OR ‘managed care’:ab,ti OR ‘accountable care organisation’:ab,ti OR ‘accountable care organisations’:ab,ti OR ‘accountable care organisation’:ab,ti OR ‘accountable care organisations’:ab,ti OR ‘collaborative care’:ab,ti OR ‘disease management’:ab,ti OR casemanagement:ab,ti OR ‘case-management’:ab,ti OR ‘case management’:ab,ti OR ‘shared care’:ab,ti OR ‘accountable care’:ab,ti OR (patient NEXT/1 cent*):ab,ti OR (person NEXT/1 cent*):ab,ti OR (multi NEXT/1 disciplin* NEXT/1 care):ab,ti OR (multidiscipl* NEXT/1 care):ab,ti OR (inter NEXT/1 disciplin* NEXT/1 care):ab,ti OR (interdiscipl* NEXT/1 care):ab,ti OR (cross NEXT/1 disciplin* NEXT/1 care):ab,ti OR (crossdisciplin* NEXT/1 care):ab,ti OR (93o-occur NEXT/1 intervent*):ab,ti OR (care NEXT/1 chain*):ab,ti OR (care NEXT/1 continuit*):ab,ti OR (care NEXT/1 transition*):ab,ti OR (chain* NEXT/1 ‘of care’):ab,ti OR ‘continuity of care’:ab,ti OR ‘cross sectoral care’:ab,ti OR ‘delivery of health care integrated’:ab,ti OR ‘integrated medicine’:ab,ti OR (integrated NEXT/1 social NEXT/1 network*):ab,ti OR ‘integration of care’:ab,ti OR ‘intersectoral care’:ab,ti OR ‘intrasectoral care’:ab,ti OR ‘linked care’:ab,ti OR ‘management model’:ab,ti OR ‘patient care management’:ab,ti OR ‘patient-centred care’:ab,ti OR ‘seamless care’:ab,ti OR (service NEXT/1 network*):ab,ti OR ‘transition of care’:ab,ti OR ‘transitional care’:ab,ti OR ‘transmural care’:ab,ti OR ‘whole system thinking’:ab,ti OR ‘holistic care’:ab,ti OR ‘health care delivery’/de OR ‘integrated health care system’/de OR ‘managed care’/de OR ‘managed care organisation’/de OR ‘accountable care organisation’/de OR ‘disease management’/de OR ‘case management’/de OR ‘patient care’/de OR ‘holistic care’/de OR ((vertical OR virtual OR ‘physician system’ OR ‘provider system’ OR functional OR horizontal OR clinical) NEXT/1 integration):ab,ti OR ((clinical OR care OR critical) NEXT/1 path*):ab,ti) **AND** (multimorbid*:ab,ti OR (multi NEXT/1 morbid*):ab,ti OR (‘multiple chronic’ NEXT/1 (condition* OR disease* OR disorder* OR ‘health problem’ OR ‘health problems’ OR illness*)):ab,ti OR (‘multiple health’ NEXT/1 (problem* OR condition*)):ab,ti OR (complex NEXT/1 (condition* OR need*)):ab,ti OR ((93o-occur* OR ‘co occurring’ OR ‘co occurrent’ OR ‘co occurrence’) NEXT/1 ‘chronic health’ NEXT/1 problem*):ab,ti OR ((93o-occur* OR ‘co occurring’ OR ‘co occurrent’ OR ‘co occurrence’) NEXT/1 disorder*):ab,ti OR ((93o-occur* OR ‘co occurring’ OR ‘co occurrent’ OR ‘co occurrence’) NEXT/1 health NEXT/1 problem*):ab,ti OR ((93o-occur* OR ‘co occurring’ OR ‘co occurrent’ OR ‘co occurrence’) NEXT/1 chronic NEXT/1 (disease* OR condition* OR illness)):ab,ti OR frailty:ab,ti OR (frail NEXT/1 elder*):ab,ti OR ((frail NEXT/1 older):ab,ti AND adult:ab,ti) OR ((frail NEXT/1 older):ab,ti AND adults:ab,ti) OR ‘comorbidity’/de OR ‘frail elderly’/de) **AND** ‘human’/de

PsycInfo – October 7th, 2015 / * .tw = title abstract, * = Indexed term.

Framework*.tw OR Model*.tw OR Programme*.tw OR Approach*.tw OR *theories/ OR *concepts/ **AND** (clinical pathway*).tw OR (care pathway*).tw OR (critical path*).tw OR (vertical integration).tw OR (virtual integration).tw OR (physician system integration).tw OR (provider system integration).tw OR (functional integration).tw OR (horizontal integration).tw OR (clinical integration).tw OR (case management).tw OR (integrated delivery of health care).tw OR (disease management).tw OR (patient care management).tw OR (patient-centred care).tw OR (accountable care organisations).tw OR (continuity of patient care).tw OR (case management).tw OR (comprehensive health care).tw OR (delivery of health care, integrated).tw OR (managed care programmes).tw OR (patient-centred care).tw OR (care delivery).tw OR (integrated care).tw OR (comprehensive care).tw OR (care coordination).tw OR (managed care).tw OR (accountable care organisation).tw OR (accountable care organisations).tw OR (accountable care organisation).tw OR (accountable care organisations).tw OR (collaborative care).tw OR (disease management).tw OR casemanagement.tw OR (case-management).tw OR (case management).tw OR (shared care).tw OR (accountable care).tw OR (patient-centred).tw OR (patient centred).tw OR (person-centred).tw OR (person

centred).tw OR (multidisciplinary care).tw OR (interdisciplinary care).tw OR (inter-disciplinary care).tw OR (crossdisciplinary care).tw OR (cross-disciplinary care).tw OR (multiple interventions).tw OR (care chain).tw OR (care chains).tw OR (care continuity).tw OR (care continuation).tw OR (care transition).tw OR (care transitions).tw OR (chain of care).tw OR (chains of care).tw OR (continuity of care).tw OR (cross sectoral care).tw OR (delivery of health care integrated).tw OR (integrated medicine).tw OR (integrated social network).tw OR (integrated social networks).tw OR (integration of care).tw OR (intersectoral care).tw OR (intrasectoral care).tw OR (linked care).tw OR (management model).tw OR (patient care management).tw OR (seamless care).tw OR (service network).tw OR (service networks).tw OR (transition of care).tw OR (transitional care).tw OR (transmural care).tw OR (whole system thinking).tw OR (holistic care).tw OR *case management/ OR *Integrated Services/ OR *Disease Management/ OR *Treatment Planning/ **AND** Frail*.tw OR (frail elderly).tw OR (frail older adult).tw OR (co-occur* health problem*).tw OR (co-occur* health condition*).tw OR (co-occur* chronic health problem*).tw OR (co-occur* chronic disease*).tw OR (co-occur* chronic condition*).tw OR (co-occur* chronic illness*).tw OR (co-occur* chronic disorder*).tw OR (94o-occur* health problem*).tw OR (94o-occur* health condition*).tw OR (94o-occur* chronic health problem*).tw OR (94o-occur* chronic disease*).tw OR (94o-occur* chronic condition*).tw OR (94o-occur* chronic illness*).tw OR (94o-occur* chronic disorder*).tw OR (co occur* health problem*).tw OR (co occur* health condition*).tw OR (co occur* chronic health problem*).tw OR (co occur* chronic disease*).tw OR (co occur* chronic condition*).tw OR (co occur* chronic illness*).tw OR (co occur* chronic disorder*).tw OR (complex need*).tw OR (complex condition*).tw OR (multiple health problem*).tw OR (multiple health condition*).tw OR (multiple chronic condition*).tw OR (multiple chronic disease*).tw OR (multiple chronic disorder*).tw OR (multiple chronic health problem*).tw OR (multiple chronic illness*).tw OR multimorbid*.tw OR (multi-morbid*).tw OR (multi morbid*).tw OR *comorbidity/ **AND** human.po

Cochrane – October 8th, 2015 / *ab, ti = abstract title, “ “ = Indexed term.

(theor*:ab,ti OR concept*:ab,ti OR framework*:ab,ti OR model*:ab,ti OR programme*:ab,ti OR approach*:ab,ti OR “concept formation”:ab,ti OR “conceptual framework”:ab,ti OR “health care programme”:ab,ti) **AND** (“care delivery”:ab,ti OR “integrated care”:ab,ti OR “comprehensive care”:ab,ti OR “care coordination”:ab,ti OR “managed care”:ab,ti OR “accountable care 94o-occur94ion”:ab,ti OR “accountable care organisations”:ab,ti OR “accountable care organisation”:ab,ti OR “accountable care organisations”:ab,ti OR “collaborative care”:ab,ti OR “disease management”:ab,ti OR casemanagement:ab,ti OR “case-management”:ab,ti OR “case management”:ab,ti OR “shared care”:ab,ti OR “accountable care”:ab,ti OR (patient NEXT/1 cent*):ab,ti OR (person NEXT/1 cent*):ab,ti OR (multi NEXT/1 disciplin* NEXT/1 care):ab,ti OR (multidiscipl* NEXT/1 care):ab,ti OR (inter NEXT/1 disciplin* NEXT/1 care):ab,ti OR (interdiscipl* NEXT/1 care):ab,ti OR (cross NEXT/1 disciplin* NEXT/1 care):ab,ti OR (crossdisciplin* NEXT/1 care):ab,ti OR (94o-occur NEXT/1 intervent*):ab,ti OR (care NEXT/1 chain*):ab,ti OR (care NEXT/1 continuit*):ab,ti OR (care NEXT/1 transition*):ab,ti OR (chain* NEXT/1 “of care”):ab,ti OR “continuity of care”:ab,ti OR “cross sectoral care”:ab,ti OR “delivery of health care integrated”:ab,ti OR “integrated medicine”:ab,ti OR (integrated NEXT/1 social NEXT/1 network*):ab,ti OR “integration of care”:ab,ti OR “intersectoral care”:ab,ti OR “intrasectoral care”:ab,ti OR “linked care”:ab,ti OR “management model”:ab,ti OR “patient care management”:ab,ti OR “patient-centred care”:ab,ti OR “seamless care”:ab,ti OR (service NEXT/1 network*):ab,ti OR “transition of care”:ab,ti OR “transitional care”:ab,ti OR “transmural care”:ab,ti OR “whole system thinking”:ab,ti OR “holistic care”:ab,ti OR “health care delivery”:ab,ti OR “integrated health care system”:ab,ti OR “managed care”:ab,ti OR “managed care organisation”:ab,ti OR “accountable care organisation”:ab,ti OR “disease management”:ab,ti OR “case management”:ab,ti OR “patient care”:ab,ti OR “holistic care”:ab,ti OR ((vertical OR virtual OR “physician system” OR “provider system” OR functional OR horizontal OR clinical) NEXT/1 integration):ab,ti OR ((clinical OR care OR critical) NEXT/1 path*):ab,ti) **AND** (multimorbid*:ab,ti OR (multi NEXT/1 morbid*):ab,ti OR (“multiple chronic” NEXT/1 (condition* OR disease* OR disorder* OR “health problem” OR “health problems” OR illness*)):ab,ti OR (“multiple health” NEXT/1 (problem* OR condition*)):ab,ti OR (complex NEXT/1 (condition* OR need*)):ab,ti OR ((94o-occur* OR “co occurring” OR “co occurrent” OR “co occurrence”) NEXT/1 “chronic health” NEXT/1 problem*):ab,ti OR ((94o-occur* OR “co occurring” OR “co occurrent” OR “co occurrence”) NEXT/1 disorder*):ab,ti OR ((94o-occur* OR “co occurring” OR “co occurrent” OR “co occurrence”) NEXT/1 health NEXT/1 problem*):ab,ti OR ((94o-occur* OR “co occurring” OR “co occurrent” OR “co occurrence”) NEXT/1 chronic NEXT/1 (disease* OR condition* OR illness)):ab,ti OR frailty:ab,ti OR (frail NEXT/1 elder*):ab,ti OR ((frail NEXT/1 older):ab,ti AND adult:ab,ti) OR ((frail NEXT/1 older):ab,ti AND adults:ab,ti) OR “comorbidity”:ab,ti OR “frail elderly”:ab,ti)

Web of Science – October 7th, 2015 / *TS = title or subject, " " = Indexed term.

TS=(theor* OR concept* OR framework* OR model* OR programme* OR approach* OR "concept formation" OR "conceptual framework" OR "health care programme") **AND** TS=("care delivery" OR "integrated care" OR "comprehensive care" OR "care coordination" OR "managed care" OR "accountable care 95o-occur95ion" OR "accountable care organisations" OR "accountable care organisation" OR "accountable care organisations" OR "collaborative care" OR "disease management" OR casemanagement OR "case-management" OR "case management" OR "shared care" OR "accountable care" OR (patient NEAR/1 cent*) OR (person NEAR/1 cent*) OR (multi NEAR/1 disciplin* NEAR/1 care) OR (multidiscipl* NEAR/1 care) OR (inter NEAR/1 disciplin* NEAR/1 care) OR (interdiscipl* NEAR/1 care) OR (cross NEAR/1 disciplin* NEAR/1 care) OR (crossdisciplin* NEAR/1 care) OR (95o-occur NEAR/1 intervent*) OR (care NEAR/1 chain*) OR (care NEAR/1 continuit*) OR (care NEAR/1 transition*) OR (chain* NEAR/1 "of care") OR "continuity of care" OR "cross sectoral care" OR "delivery of health care integrated" OR "integrated medicine" OR (integrated NEAR/1 social NEAR/1 network*) OR "integration of care" OR "intersectoral care" OR "intrasectoral care" OR "linked care" OR "management model" OR "patient care management" OR "patient-centred care" OR "seamless care" OR (service NEAR/1 network*) OR "transition of care" OR "transitional care" OR "transmural care" OR "whole system thinking" OR "holistic care" OR "health care delivery" OR "integrated health care system" OR "managed care" OR "managed care organisation" OR "accountable care organisation" OR "disease management" OR "case management" OR "patient care" OR "holistic care" OR ((vertical OR virtual OR "physician system" OR "provider system" OR functional OR horizontal OR clinical) NEAR/1 integration) OR ((clinical OR care OR critical) NEAR/1 path*)) **AND** TS=(multimorbid* OR (multi NEAR/1 morbid*) OR ("multiple chronic" NEAR/1 (condition* OR disease* OR disorder* OR "health problem" OR "health problems" OR illness*)) OR ("multiple health" NEAR/1 (problem* OR condition*)) OR (complex NEAR/1 (condition* OR need*)) OR ((95o-occur* OR "co occurring" OR "co occurrent" OR "co occurrence") NEAR/1 "chronic health" NEAR/1 problem*) OR ((95o-occur* OR "co occurring" OR "co occurrent" OR "co occurrence") NEAR/1 disorder*) OR ((95o-occur* OR "co occurring" OR "co occurrent" OR "co occurrence") NEAR/1 health NEAR/1 problem*) OR ((95o-occur* OR "co occurring" OR "co occurrent" OR "co occurrence") NEAR/1 chronic NEAR/1 (disease* OR condition* OR illness)) OR frailty OR (frail NEAR/1 elder*) OR ((frail NEAR/1 older) AND adult) OR ((frail NEAR/1 older) AND adults) OR "comorbidity" OR "frail elderly")

Sociological Abstracts – October 23rd, 2015 / *TI = title, AB = Abstract, SU.EXACT = Indexed term.

TI,AB(theor*) OR TI,AB(concept*) OR TI,AB(framework*) OR TI,AB(model*) OR TI,AB(programme*) OR TI,AB(approach*) OR SU.EXACT("Organisation Theory") OR SU.EXACT("Models") OR SU.EXACT("Concepts") OR SU.EXACT("Concept Formation") OR SU.EXACT("Paradigms") OR SU.EXACT("Programmes") OR SU.EXACT("Approach/Approaches") **AND** TI,AB("clinical pathway") OR TI,AB("care pathway*") OR TI,AB("critical path*") OR TI,AB("vertical integration") OR TI,AB("virtual integration") OR TI,AB("physician system integration") OR TI,AB("provider system integration") OR TI,AB("functional integration") OR TI,ab("horizontal integration") OR TI,ab("clinical integration") OR TI,ab("integrated delivery of health care") OR TI,ab("disease management") OR TI,ab("patient care management") OR TI,ab("patient-centred care") OR TI,ab("accountable care organisations") OR TI,ab("continuity of patient care") OR TI,ab("comprehensive health care") OR TI,ab("managed care programmes") OR TI,ab("care delivery") OR TI,ab("integrated care") OR TI,ab("comprehensive care") OR TI,ab("care coordination") OR TI,ab("managed care") OR TI,ab("accountable care") OR TI,ab("accountable care organisation") OR TI,ab("accountable care organisations") OR TI,ab("accountable care organisations") OR TI,ab("collaborative care") OR TI,ab("case management") OR TI,ab("casemanagement") OR TI,ab("case-management") OR TI,ab("shared care") OR TI,ab("patient-centred") OR TI,ab("patient centred") OR TI,ab("person-centred") OR TI,ab("person centred") OR TI,ab("multidisciplinary care") OR TI,ab("interdisciplinary care") OR TI,ab("inter-disciplinary care") OR TI,ab("crossdisciplinary care") OR TI,ab("cross-disciplinary care") OR TI,ab("multiple interventions") OR TI,ab("care chain") OR TI,ab("care chains") OR TI,ab("care continuity") OR TI,ab("care continuation") OR TI,ab("care transition") OR TI,ab("care transitions") OR TI,ab("chain of care") OR TI,ab("chains of care") OR TI,ab("continuity of care") OR TI,ab("cross sectoral care") OR TI,ab("delivery of health care integrated") OR TI,ab("integrated medicine") OR TI,ab("integrated social network") OR TI,ab("integrated social networks") OR TI,ab("integration of care") OR TI,ab("intersectoral care") OR TI,ab("intrasectoral care") OR TI,ab("linked care") OR TI,ab("management model") OR TI,ab("patient care management") OR TI,ab("seamless care") OR TI,ab("service network") OR TI,ab("service networks") OR TI,ab("transition of care") OR TI,ab("transitional care") OR TI,ab("transmural care") OR TI,ab("whole system thinking") OR TI,ab("holistic care") OR SU.EXACT("Social Integration") OR SU.EXACT("Interdisciplinary Approach") OR SU.EXACT("Managed Care Services") OR SU.EXACT("Coordination") OR SU.EXACT("Cooperation") OR SU.EXACT("Case Management") **AND** TI,AB("frailty") OR TI,AB("frail elder*") OR TI,AB("frail older adult*") OR TI,AB("complex need*") OR TI,AB("complex condition*") OR TI,AB("multiple health problem*") OR TI,AB("multiple health condition*") OR TI,AB("multiple chronic condition*") OR

TI,AB("multiple chronic disease*") OR TI,AB("multiple chronic disorder*") OR TI,AB("multiple chronic health problem*") OR TI,AB("multiple chronic illness*") OR TI,AB("multimorbid*") OR TI,AB("multi-morbid*") OR TI,AB("multi morbid*") OR ((TI,AB("96o-occur*") OR TI,AB("co-occur*") OR TI,AB("co occur*")) AND (TI,AB("health problem*") OR TI,AB("health condition*") OR TI,AB("chronic health problem*") OR TI,AB("Chronic disease*") OR TI,AB("Chronic condition*") OR TI,AB("chronic illness*") OR TI,AB("chronic disorder*"))) OR SU.EXACT("Comorbidity")

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File 2: Details on extracted data

Table 1 Theories and models		
Overall theories/models	**Article ID/Reference number**	**No. articles**
CCM	Doos et al., 2014. Bruin et al., 2012. Calciolari et al., 2011. Boyd & Fortin, 2010. Boyd et al., 2008. Kadu et al., 2015. Parekh et al., 2011. Morgan et al., 2015. Spoorenberg et al., 2013. Thiem et al., 2011. Petersen et al., 2014. Pietrantonio et al., 2015. Piette et al., 2004. Roberts et al., 2012. Sampalli et al., 2012. Van Houdt et al., 2013. Lin et al., 2014. Alfaro Lara et al., 2012. Singer et al., 2011. Dorr et al., 2006. Findley, 2014. Morrin et al., 2013. Muntinga et al., 2012. Roland et al., 2012. Smith et al., 2012. Harris et al., 2013. Allen et al., 2012. Soubhi et al., 2010. Hong et al., 2014. Knowles et al., 2015. Lalonde et al., 2012.	31
Chronic Care Model (CCM)	Doos et al., 2014. Bruin et al., 2012. Calciolari et al., 2011. Boyd & Fortin, 2010. Boyd et al., 2008. Kadu et al., 2015. Parekh et al., 2011. Morgan et al., 2015. Spoorenberg et al., 2013. Thiem et al., 2011. Petersen et al., 2014. Pietrantonio et al., 2015. Piette et al., 2004. Roberts et al., 2012. Sampalli et al., 201.. Van Houdt et al., 2013. Lin et al., 2014. Alfaro Lara et al., 2012. Singer et al., 2011. Dorr et al., 2006. Findley, 2014. Morrin et al., 2013. Muntinga et al., 2012. Roland et al., 2012. Smith et al., 2012. Harris et al., 2013. Allen et al., 2012. Soubhi et al., 2010. Hong et al., 2014. Knowles et al., 2015. Lalonde et al., 2012.	31
Guided Care Model (GCM)	Boyd et al., 2007. Boyd et al., 2008. Boult & Wieland, 2010. Thiem et al., 2011. Smith et al., 2012. Soubhi et al., 2010.	6
Acute Complex Care Model (ACCM)	Pietrantonio et al.,2015.	1
Innovative Care for Chronic Conditions model by WHO	Oni et al., 2014.	1
Health belief model	Coventry et al., 2014.	1
Banduras Social Cognitive Theory and Banduras self-efficacy model	Wu & Chang, 2014.	1

Patient-Centred Care Model (PCCM)	Silver et al., 2011.	1
Multidisciplinary, patient-centred, integrated and coordinated model of care	Roughead et al., 2011.	1
Public Health model	Lorig et al., 1996.	1
Medical model	Lorig et al., 1996.	1
Anderson Behavioural Model	Van Houdt et al., 2013.	1
Comprehensive model of primary care consultations	Muth et al., 2014.	1
Biopsychosocial model	Smith et al., 2006.	1
Biomedical model	Lefevre et al., 2014.	1
Donabedian Quality Framework	Van Houdt et al., 2013.	1
Organisational Design Framework	Van Houdt et al., 2013.	1
Rational Coordination Framework	Van Houdt et al., 2013.	1
Multilevel Framework	Van Houdt et al., 2013.	1
Five phases of team coordination	Van Houdt et al., 2013.	1
Interaction model	Van Houdt et al., 2013.	1
Time, interaction and performance (TIP) theory	Van Houdt et al., 2013.	1
Interorganisational network theory	Van Houdt et al., 2013.	1
Cognitive workflow model	Van Houdt et al., 2013.	1
Framework of team performance	Van Houdt et al., 2013.	1
Integrative model	Van Houdt et al., 2013.	1
Care transition intervention model	Silver et al., 2011.	1
Biopsychosocial model	Smith et al., 2006.	1
Ecological model	Findley, 2014.	1
Alberta healthy living model	Morrin et al., 2013.	1
Integrated model of care to address the challenges of people with multi-morbidity	Sampalli et al., 2012.	1

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Kapitel 5

The SELFIE framework for integrated care for multi-morbidity: Development and description

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Abstract

Background: The rise of multi-morbidity constitutes a serious challenge in health and social care organisation that requires a shift from disease- towards person-centred integrated care. The aim of the current study was to develop a conceptual framework that can aid the development, implementation, description, and evaluation of integrated care programmes for multi-morbidity.

Methods: A scoping review and expert discussions were used to identify and structure concepts for integrated care for multi-morbidity. A search of scientific and grey literature was conducted.

Discussion: meetings were organised within the SELFIE research project with representatives of five stakeholder groups (5Ps): patients, partners, professionals, payers, and policy makers.

Results: In the scientific literature 11,641 publications were identified, 92 were included for data extraction. A draft framework was constructed that was adapted after discussion with SELFIE partners from 8 EU countries and 5P representatives. The core of the framework is the holistic understanding of the person with multi-morbidity in his or her environment. Around the core, concepts were grouped into adapted WHO components of health systems: service delivery, leadership & governance, workforce, financing, technologies & medical products, and information & research. Within each component micro, meso, and macro levels are distinguished.

Conclusion: The framework structures relevant concepts in integrated care for multi-morbidity and can be applied by different stakeholders to guide development, implementation, description, and evaluation.

1. Introduction

As Western populations are ageing, the prevalence of multi-morbidity is rapidly increasing. Persons with multi-morbidity, as compared to persons with a single chronic disease, have a lower quality of life [1], a higher age-adjusted mortality [2], greater healthcare utilization such as a greater likelihood to be admitted to hospital and longer length of hospital stay [3], greater absenteeism [4] and earlier exit from the workforce [5]. Although methods to measure multi-morbidity differ greatly between studies and countries, the prevalence in the population over 65 years is commonly estimated to be larger than 60% [6–9]. Multi-morbidity, however, is not solely a concern amongst older persons, as in absolute terms there are more younger persons with multi-morbidity [7].

In the current article multi-morbidity is defined as multiple (i.e., at least two) chronic conditions, physical or mental, occurring in one person at the same time, where one is not a known complication of the other. Persons with multi-morbidity often require care from multiple professionals within the healthcare- and social care sectors. In a fragmented care system, this creates conflicting, overly-demanding, treatment advices that may discourage compliance.

SELFIE (Sustainable intEgrated chronic care modeLs for multi-morbidity: delivery, FInancing, and performancE) is a Horizon2020 funded EU project that aims to contribute to the improvement of person-centred care for persons with multi-morbidity by proposing evidence-based, economically sustainable, integrated care programmes that stimulate cooperation across health and social care and are supported by appropriate financing and payment schemes. More specifically, SELFIE aims to:

- Develop a taxonomy of promising integrated care programmes for persons with multi-morbidity;
- Provide evidence-based advice on matching financing/payment schemes with adequate incentives to implement integrated care;
- Provide empirical evidence of the impact of promising integrated care on a wide range of outcomes using Multi-Criteria Decision Analysis;
- Develop implementation and change strategies tailored to different care settings and contexts in Europe, especially Central and Eastern Europe.

The SELFIE consortium includes eight organisations in the following countries: the Netherlands (coordinator), Austria, Croatia, Germany, Hungary, Norway, Spain, and the UK. www.selfie2020.eu [Grant Agreement No 634288]

Box 5.1: About the SELFIE project

Thus persons with multi-morbidity, are likely to benefit from integrated care that is well coordinated and continuous [10]. In the current article integrated care is defined as structured efforts to provide coordinated, pro-active, person-centred, multidisciplinary care by two or more well-communicating

and collaborating care providers either within or across sectors. In order to realize such integrated care, a paradigm shift from disease- to person-centeredness is necessary in service delivery, management, and funding [11].

Evidence on the effectiveness of integrated care for multi-morbidity is still limited [12–15]. Nonetheless, various innovative programmes have been identified in which integrated care is being provided for persons with multi-morbidity (Struckmann et al., submitted) [10]. These programmes vary greatly with regard to target group, involved care providers, implementation practices, and actual care delivery. In order to be able to compare integrated care programmes for multi-morbidity in different contexts it would be helpful to apply a general framework that structures relevant concepts. Currently, integrated care programmes often refer to elements of Wagner's Chronic Care Model (CCM) [16]. This model, however, was not made specifically for multi-morbidity care. In the case of multi-morbidity, specific issues need to receive more attention, such as dealing with multiple care providers potentially working indifferent sectors, the risk of care fragmentation, payment forms that adequately account for multi-morbidity, treatment interaction, the need to prioritise treatments goals, and the applicability of single disease guidelines.

The aim of this study is to develop a conceptual framework that can be used to aid the development, implementation, description, and evaluation of integrated care for multi-morbidity. It can be used by different types of actors in the field, e.g. developers of integrated care programmes (clinicians, managers), policy makers, health insurers, and researchers.

The necessity for such a framework was acknowledged by the European Commission, which granted Horizon2020 funds to the SELFIE research project (see Box 4). The development of a conceptual framework for integrated care for multi-morbidity forms part of the initial work being conducted in the SELFIE project. The framework will be used to guide the description and evaluation of promising integrated care programmes for multi-morbidity in the eight SELFIE partner countries.

2. Methods

A scoping review of scientific and grey literature and expert discussions were used to identify and structure relevant concepts of integrated care for persons with multi-morbidity into a framework. A scoping review was chosen as an approach to review different aspects related to integrated care for multi-morbidity in the scientific and grey literature, as the strength of this method lies in producing broad and comprehensive results [17]. Discussions with experts were used to complement the findings from the literature and to ensure that the concepts and structure of the framework were recognized, understood, and could be used in the future.

2.1. Scoping review

A search for scientific literature was conducted in October 2015 in the following electronic databases: Cochrane, Embase, PubMed, PsycInfo, Scopus, Sociological Abstracts, Social Services Abstracts, and Web of Science. Articles were searched for that pertained to 1) models (e.g., concepts, frameworks, theories), 2) integrated chronic care (e.g., comprehensive care, managed care, collaborative care), and 3) multi-morbidity (e.g., multiple health problems, comorbidity, frail elderly). A comprehensive search strategy was developed with the assistance of a librarian. When possible standardized or indexed search terms were used. The following in- and exclusion criteria were used:

- Inclusion criteria: a model (i.e., framework, theory) or key elements of integrated care for multi-morbidity is described
- Exclusion criteria: single-disease focus, fundamental biomedical studies, conference abstracts, letters to the editor, editorials, or commentaries, no full text available, non-English language.

Reviewing was done in two steps, first on the basis of title and abstract, and hereafter on full text. Both steps were done by two independent reviewers. Hereafter, data was extracted by six reviewers working in pairs on: publication details, methods, key concepts pertaining to integrated care. Data extraction was done during the winter of 2015–2016. More details on the methods of the scoping review of the scientific literature including the search terms and a flowchart of in- and excluded publications can be found in Struckmann et al. (2018).

Alongside the scoping review of the scientific literature, a targeted search was conducted in the [grey] literature. Key publications were identified that were related to integrated care in general or to specific themes in the framework. Furthermore, specific multi-morbidity reports, and findings from related research projects were included.

2.2. Expert discussion meetings

In the fall of 2015 a core group of SELFIE researchers responsible for the framework development held multiple brainstorm sessions to draft the initial conceptual framework. The expertise of this group covers the following fields: medicine, public health, health sciences, health policy and systems, health economics, psychology, sociology, and anthropology. This group structured initial concepts identified in the targeted [grey] literature into a framework that consisted of a micro,

meso, and macro level. This framework was adapted and expanded upon by further findings from the scientific literature search.

A draft framework made by the core group of SELFIE researchers was presented in January 2016 to members of the SELFIE consortium and the SELFIE international stakeholder advisory board. Representatives of the SELFIE consortium are from academic institutions in the eight SELFIE partner countries. The international stakeholder advisory board is made up of representatives from five stakeholder groups (5Ps): Patients (e.g., patient forum representatives, persons with multi-morbidity), Partners (e.g., informal caregiver network representatives), Professionals (e.g., medical doctors, researchers, and experts in the field of integrated care/multi-morbidity), Payers (e.g., persons working for health insurers), and Policy makers (e.g., persons from international health policy organisations and guideline networks). These experts provided feedback on the framework from their different cultural, political, health system, professional, and personal perspectives. After the international meeting, the core group of SELFIE researchers held several more brainstorm sessions to use this feed-back to create a revised version of the framework. Meanwhile, findings from the scoping review received a stronger presence in the framework and the description thereof.

A revised framework was developed that encompassed the micro, meso, and macro levels and grouped concepts into six components: service delivery, leadership & governance, workforce, financing, technologies & medical products, and information & research. These components stem from the WHO six key components used to describe, understand, and compare different health systems (i.e., leadership and governance, health information systems, health financing, human resources for health, essential medical products and technologies, and service delivery) [18]. The components were slightly adapted for the SELFIE framework to be applicable for integrated care for multi-morbidity. The use of these familiar and well-defined components will facilitate the use of the framework in different contexts.

In the spring-summer of 2016, national stakeholder meetings with representatives from the 5 Ps were held in all SELFIE partner countries. During these national meetings, the revised framework was presented and discussed. SELFIE partners returned feedback from their meetings to the core group of SELFIE researchers who used this to further develop the framework.

The framework presented in this article thus comes forth from an iterative process − findings from the scoping review and the expert meetings were used to continuously update and optimize the framework.

The methods used to develop the framework are of a qualitative nature. Concepts were clustered and described that are likely to be relevant in the provision of integrated care for multi-morbidity, however, no weight or systematic comparison between the relevance of concepts has been made.

3. Results

3.1. Scoping review

The search in the scientific literature yielded 11,641 unique publications. After reviewing titles and abstracts, 270 publications remained. After full text reviewing, 92 publications were included in this study for the purpose of the framework development.

Most of the articles included (78%) were of a descriptive nature− describing focus group and interview studies, and study designs of integrated care programmes for multi-morbidity. As the search strategy was quite broad with regard to 'multi-morbidity', studies were included on specific multi-morbid combinations but also on more general complex patients and frail elderly (including palliative care studies) in which the majority consists of persons with multi-morbidity. The full results of the scoping review of the scientific literature are extensively described elsewhere (Struckmann et al., submitted).

The additional targeted search for relevant [grey] literature led to the inclusion of scientific literature pertaining to the CCM [16], the GCM [19], and the Development Model for Integrated Care [20, 21]. Additional scientific literature specifically on financing was included, as our search strategy did not capture this theme entirely but it was deemed as important for the framework development [22–28]. This literature was identified through a search for specific journals and experts known to publish in this field and through discussion with project partners and stakeholders. The Cochrane reviews on individualised care planning and shared decision-making were also included [29, 30]. Furthermore, the WHO 'World Report on Ageing and Health' [31] and 'Global strategy on people-centred and integrated health services' [11] were used, as well as a report published by the King's Fund on 'Providing integrated care for older people with complex needs' [32]. Results from prior EU-funded projects were used:'ICARE4EU', which aims to compare integrated care programmes for multi-morbidity [10, 33–36], the Joint Action on Chronic Diseases (JA-CHRODIS), specifically results from the work focusing on multi-morbidity [37], and 'Advanced Care Coordination and TeleHealth Deployment' (ACT) [38]. In order to gain insight into guidelines for multi-morbidity, the UK National Institute for Health and Care Excellence (NICE) draft guideline was used as it is extensive and the most recent [39].

3.2. The SELFIE framework for integrated care for multi-morbidity

The conceptual framework is presented in Fig. 1. The framework is comprised of a core in which the individual with multi-morbidity and his or her environment is placed centrally. Concepts pertaining to integrated care for multi-morbidity are grouped at the micro, meso and macro levels. They are further split according to the six [WHO] components: service delivery, leadership & governance, workforce, financing, technologies & medical products, and information & research. Below, first the core of the framework is described, where after each component, starting at the top and moving clockwise, is described at the micro, meso, and macro level. Lastly, the role of monitoring is described.

3.2.1. Holistic understanding of the individual with multi-morbidity in his/her environment

The basis of person-centred integrated care for individuals with multi-morbidity is a holistic understanding of these individuals' health and well-being, capabilities, self-management abilities, needs, preferences, and the environment that they find themselves in. e.g. [31, 40, 41]. Often a holistic understanding of an individual with multi-morbidity and his or her environment is aided by formal assessments [19, 31, 32, 37, 39, 42–51, 60, 67, 73]. However, the word understanding is used in the framework instead of assessment in order to signify that an individual's situation is dynamic, not static, and thus requires regular monitoring.

The way health is construed is no longer only as physical, mental, and social well-being, but also includes the ability to adapt and self-manage, to restore, adapt, and cope [52–54]. This highlights the extent to which a person has the ability to achieve valuable functions [55]. Self-management abilities play an important role in integrated care [16, 19, 31, 37, 41, 56–61]. An individual's self-management abilities are especially relevant in multi-morbidity, as persons need to deal with multiple problems and providers that may work in different sectors, simultaneously [58, 59, 62, 63]. An individual with multi-morbidity often needs to make choices and to set priorities when it is too demanding to address multiple health problems simultaneously. Hence, professionals need to encourage people with multi-morbidity to clarify what their personal goals, preferences, and priorities are [60, 64–66]. This should always be done taking an individuals' capabilities and preferences into consideration and adapting [self-management] expectations accordingly. To this end, elements entangled in an individual's preferences should also be understood, such as their personality, religion, culture, ethnicity, illness perceptions, socio-financial position, and educational background.

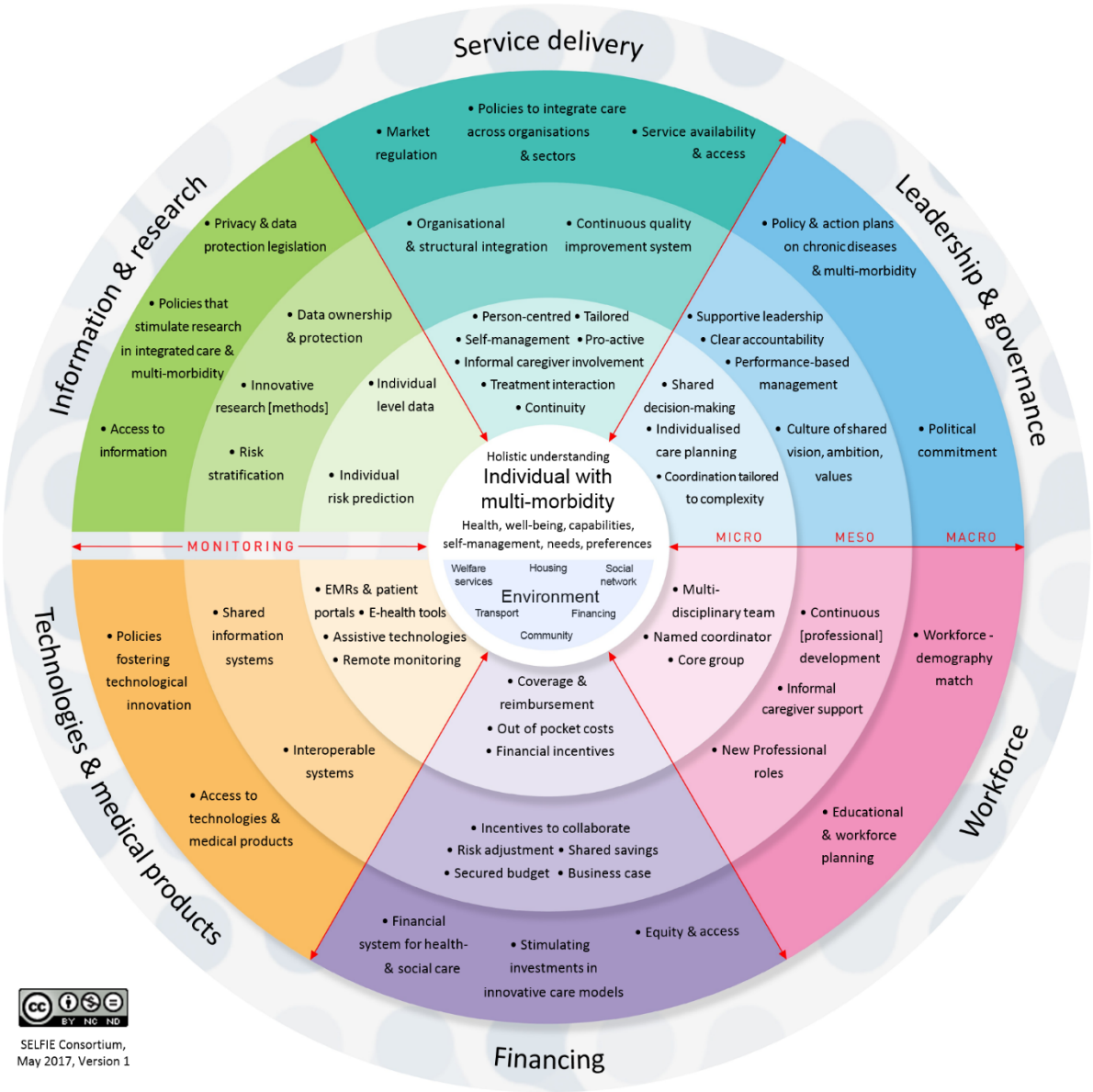

Fig. 5.1: The SELFIE Framework for Integrated Care for Multi-Morbidity

A holistic understanding includes the individual's environment [31]. Environmental elements play a role in the relationship between the individual's situation and the process of integrated care. The social network is an important element to consider, such as the availability of family members, friends, and neighbours who can be involved as informal caregivers, as well as the burden of care that the informal caregivers may experience [31, 39, 57, 67–70]. Other environmental elements to consider include: financial situation (e.g., is someone financially independent?) [60, 71, 72], housing (e.g., does someone live alone, are the bed- and bathroom on the ground floor?) [73], the physical surroundings (e.g. is it safe, proximity to services?), the availability of community services (e.g., self-help groups) [16, 62, 74], and transport (e.g., is accessible public transport available, parking costs?) [19, 73, 75].

3.2.2. Service delivery

3.2.2.1. Micro

As persons with multi-morbidity need to deal with multiple health and/or social problems, it is especially important to offer a person-centred integrated care approach that is tailored to the individual and his or her environment [21, 39, 56, 66, 68, 76]. Tailoring care can be done on the basis of a formal holistic assessment, as described in the previous section. As the situation of persons with multi-morbidity may change over time, flexibility is important [64, 68, 77, 78] − flexible care can be continuously updated to match a person's needs [79, 80, 104].

Integrated care for multi-morbidity often includes promoting various self-management abilities [12, 32, 81] like behavioural/lifestyle changes [46, 82], coping strategies [83], health literacy [37, 38, 84], navigation through the care system [75],medication adherence [46, 50, 82], communication skills [60, 83], goal-setting [82], prioritizing [83], and planning [19, 82, 85, 86]. Self-management can be seen as a means for persons with multi-morbidity (and their informal caregivers) to become more pro-active, motivated, and remain autonomous [61, 63, 87]. The care itself may also be pro-active, with appropriate follow-up and monitoring to detect signs of progression and potential complications in an early phase [50, 56, 88]. Persons with multi-morbidity may find self-management very demanding, so education and coaching need to be tailored to an individual's 'starting point' [21, 63, 89].

As persons with multi-morbidity often deal with different professionals, organisations, and sectors, it is important to ensure smooth and monitored transitions throughout the care process [11, 16, 19, 68, 90, 91]. Various integrated care programmes point to continuity as a critical element [43, 44, 75] that facilitates good relationship-building between persons with multi-morbidity, professionals, and informal caregivers [56, 92].

Whenever possible, involving the informal caregiver in the decision-making process is desired [64, 71, 85, 93], especially in multi-morbidity [37, 65, 87]. The informal caregiver can be involved in overall care planning [19, 86], in setting priorities [94], and during transitions between sites (e.g., after hospital discharge) [84]. However, the informal caregiver's needs [56, 95], quality of life, and burden of caregiving should be considered as they may have health problems themselves and be balancing a career as well [75, 96].

For persons with multi-morbidity that take multiple medications, prescribed by multiple care providers [78], medication adherence, accumulation of side-effects, and drug-interactions may become an issue [10]. Because the evidence in guidelines is often based on studies in patients with a

single disease [78, 97], trying to follow multiple single-disease guidelines simultaneously has been critiqued [78, 87]. Hence, attention is required for treatment interactions (i.e., polypharmacy [72, 78, 84] and guideline interactions [64, 78, 79]). Care providers may need the flexibility to tailor disease-specific guidelines [65, 84, 98]. However, providers may lack training to do so [99]. For this reason, person-centred guide-lines for multi-morbidity are being developed, such as those by NICE [16, 39, 69, 100]. An important element of these guidelines is the review of medications and treatments and their interactions [39, 81, 101], including a discussion about the relevance of certain medications prescribed with a long-term prevention perspective for people with a limited life expectancy [39].

3.2.2.2. Meso

Organisational and structural integration can facilitate integrated care delivery and especially increase sustainability [102]. In the care provision of multi-morbidity this may be especially relevant, as integration across health- and social care sectors may be needed. Different types of organisational structures are possible, ranging from fully integrated formal alliances or mergers to informal cooperation agreements [32, 71]. The need for organizational transparency and ongoing communication to ensure integrated care have been highlighted [103, 104], as well as the need for health, social, and community services to be linked [16]. It is important to note that an integrated organisation does not necessarily mean that care delivery will be integrated [56], nor is organisational integration a goal in itself – it is a means of improving and integrating care [32]. It has been proposed that in creating collaborative and integrated care, this should be 'structured for flexibility', meaning that systems in place a priori expect the unexpected and are ready and able to truly personalize care [104].

Persons with multiple chronic conditions pose a challenge for effective continuous quality improvement systems, as current quality standards mostly address single-diseases [65]. Identifying and developing indicators in multi-morbidity is a challenge [105].

3.2.2.3. Macro

Integrated care programmes for multi-morbidity would bene-fit from macro level policies that stimulate the integration of care across organisations and sectors, such as through close links between Ministries of Health and of Social Affairs [106]. In parallel, in competitive environments, market regulation is needed that allows for collaboration between providers but protects consumer choice, such as more flexible anti-trust laws. Lastly, policies that ensure service availability and access need to be in place. This pertains to the availability of community and public health resources and timely (e.g., acceptable waiting times), geographical (e.g., reasonable travel times) and physical

(e.g., wheelchair accessible) access. Service access should protect vulnerable groups, such as those with multi-morbidity.

3.2.3. Leadership & governance

3.2.3.1. Micro

In the case of multi-morbidity, prioritisation is a key aspect, but discrepancies herein can exist between persons involved in the care process [78, 84]. Shared decision-making is thus an integral part of integrated care, and entails discussing goals and options to achieve these, identifying and clarifying issues and possible solutions, and ensuring that all involved persons understand one-another[21, 30, 37, 39, 41,62, 66, 69]. The person with multi-morbidity and the informal caregiver should be empowered and engaged in becoming partners [11, 16, 41, 70, 93, 104] with shared responsibility [38, 56] in the decision-making and care process. The goal hereof is maintaining autonomy, increasing adherence, and improving out-comes [38, 41, 104].

Shared decision-making should result in the development of a single individualised care plan [45]. For persons with multi-morbidity individualised care planning appears to promise more successful integrated care [19, 29, 32, 39, 43]. Planning may include agreed upon goals and treatments, timelines, responsibilities, and follow-up to review progress [38, 44, 46, 49–51, 66, 71, 72, 74, 77, 81, 84, 94, 96, 104]. Plans can also be used to reassess and adjust goals, ensure continuity of care, and act as a communication tool between providers and patients [45]. Such plans should also specify who is responsible for the coordination of care. Coordination should be tailored to the complexity of the person's care needs [103]. In managing persons with multi-morbidity, recognition is needed that not everyone requires the most intense form of coordination (e.g., a case manager) [80, 99, 107]. A formal holistic assessment can be used as a means of determining the type of care needed [70] and to help staff determine which resources (e.g., the level of coordination) are needed [48].

3.2.3.2. Meso

Successful implementation of integrated care for multi-morbid persons can be stimulated by supportive leadership that is fully committed to clearly-defined goals, is trusted by those involved, and acknowledges professional autonomy [62]. Supportive leadership throughout all levels of integrated care that promotes open discussion is seen as an important success factor for inter-professional collaboration [103] and commitment to quality [74]. In line with this, strong and engaged leaders should promote the uptake of a new approach and facilitate [readiness for] change [16, 20, 111]. Organisational transparency and clear accountability towards employees (e.g., care

providers) and end-receivers (e.g., persons with multi-morbidity, informal caregivers) are important to foster in decision-making processes [11].

Furthermore, in providing integrated care for multi-morbidity it may be important that a culture of shared vision, ambition, and values is created [77]. In order for professionals and organisations to successfully collaborate, willingness and belief in the collaboration, trust in one-another, and mutual respect is necessary [103].

It is advocated that integrated care in multi-morbidity is supported by performance-based management through measurement of performance targets on all levels, monitored by a limited core set of indicators [21, 31]. Implementing performance-based management should be done carefully to avoid opportunistic behavior, but instead create a culture of continuous improvement. This can be facilitated by a continuous quality improvement system.

3.2.3.3. Macro

A person-centred integrated care programme can benefit from wider political commitment and should be well-embedded in the structure and governance of the regional and national system, as these can both positively and negatively influence a programme [102]. Thus it is important that (inter)national/regional policy and action plans on chronic diseases and multi-morbidity promote multidisciplinary and inter-organisational collaborative care [11].

3.2.4. Workforce

3.2.4.1. Micro

Integrated care for multi-morbidity calls for multidisciplinary teamwork that crosses the healthcare, social care, and volunteer work boundaries [12, 16, 21, 31, 32, 37, 41, 44, 68, 71, 73, 82, 85, 94]. Multidisciplinary teams need to be tailored to the target population and the context [71], and it is important to realize that it takes time to achieve effective teamwork [108]. Not only professionals with different backgrounds need to work together and trust one-another, but also persons with multi-morbidity and informal caregivers themselves need to be involved in such teams [80]. An important aspect of efficient teamwork is good communication between all persons involved in the process [48, 85, 99].

Often, a differentiation is made between a core group of professionals and a wider network that can be called upon [32]. Having too many professionals involved in the core team can con-fuse and overwhelm persons with multi-morbidity and discourage them from taking on an active role in the care process them-selves [63]. Clear roles and responsibilities for all persons involved, including the

person with multi-morbidity him- or herself, are thus desirable. Having a named coordinator is deemed important [32, 37, 38, 58, 74, 76, 78, 99, 102].

3.2.4.2. Meso

Continuous professional education and development is an important topic in integrated care for multi-morbidity [19, 50, 64], that can be divided into training of 'soft skills' (i.e., communication, teamwork and relationships, self-management promotion, willing-ness to change/learn) and managerial skills for multi-morbidity. There seems to be a need to train skills in teamwork and in building durable relationships with patients, other professionals, and informal caregivers [58, 78, 109]. Professionals also need to know how to train self-management skills [37, 41, 82], and specifically learn motivational interviewing techniques [74, 85, 96]. Managerial skills include training in being a case manager [49, 110], conducting assessments [47, 48], navigating the health- and social care systems [48], working with individualised care plans [48], and knowing how to risk-stratify in order to ensure that care is tailored to complexity [48]. Continuous professional education and development is, however, not self-evident and stresses the need for willingness to change, learn from each other, and to share best practices [21, 79]. As described in the sections above, the role of the informal care-giver in the multi-morbidity care process is often prominent. As both a user and provider of care, the informal caregiver can be found at the core of the framework as well as in service delivery and in the workforce components of the care process. However, it should always be discussed openly whether and how the informal caregiver can be involved in the care process. The caregiver burden should be addressed [10, 75] as well as appropriate support for informal caregivers [75]. Forms of support include education [19, 31] to increase abilities [95] and strengthen confidence [95] and reducing the pressure of being the sole responsible person (i.e., establishing clear responsibilities, offering possibilities to take a caregiving break).

Appropriate workforce planning at organisational level is necessary and includes attention for workload and sufficient team resources [71, 104, 111], professional education, and sustainability of staff and informal caregivers [111]. The increasing pressure on the traditional workforce and the need to contain costs underline the need for exploring new professional roles (e.g., physician assistants, specialised nurse practitioners, social district support teams) [27] or shifting tasks to specially trained professionals, provided that it is in the interest of persons with multi-morbidity.

3.2.4.3. Macro

At the macro level, workforce development must match the challenges of an ageing society in which retirement ages are increasing while at the same time a greater proportion of people require care

for multiple morbidities. These changes result in an increased need for care professionals, persons with multi-morbidity, and informal caregivers alike to remain in paid employment longer. It is important to consider possible strains on the workforce-demography match. The workforce needs to be sustainable in providing care, and legislation needs to be in place that supports flexible working arrangements, for example to allow informal caregivers to balance paid employment and caregiving [31].

In educational and workforce planning, changes in demography and the type of care provision that will be needed in the future should be considered. For the prior this could be by including the training of geriatric skills, generalist competencies, and communication and teamwork skills in curriculums [31]. For the latter it can include enrolling sufficient students into these curriculums and creating new professional roles and volunteer opportunities.

3.2.5. Financing

3.2.5.1. Micro

Coverage and reimbursement of the interventions included in person-centred integrated care programmes need to be generous enough to ensure equity in financial access for those who need them. Reimbursement structures should also guarantee enough time for professionals to work with persons with multi-morbidity and informal caregivers [64]. The extent of co-payments, co-insurance, and deductibles (cost-sharing) for services and goods covered, direct payments for those not covered, and in some con-texts informal payments should also be considered because these out-of-pocket costs may influence access, [non]adherence, and how and which care is used. Certain financial incentives may be used to motivate persons with multi-morbidity to participate in and adhere to integrated care programmes, such as, vouchers, free gym memberships, free workshops or training and out of office-hours access to care [35].

3.2.5.2. Meso

Whereas the most dominant payment systems for individual providers are fee-for-service and/or capitation, single organisations are often paid by Diagnostic Related Groups (DRG) or an overall budget. These payment systems lack specific incentives to stimulate multidisciplinary collaboration. In fact, the incentive in a fee-for-service system is to increase production; a DRG system provides stronger incentives for producing DRGs than for appropriately addressing patient's needs within the DRG [33]. In reaction, new payment systems that intend to support collaboration between professionals and organisations have been introduced [25, 26]. The simplest example hereof is pay-for-coordination, i.e., specific payments for support services that are not covered by the base

payment systems [28]. A more comprehensive form with greater incentives to collaborate is bundled payment, i.e., a single payment that covers all services from different providers related to a particular disease or episode during a defined period of time [28]. In the Netherlands bundled payment for the care for frail elderly, covering care provided by various disciplines (GP, geriatrician, occupational therapist, pharmacist) is being piloted [112]. The most comprehensive form to date is population-based payment frameworks involving the definition of a virtual budget that is based on the case mix of the catchment population. When the actual costs of this target population are lower than the expected costs, based on either historical data or norm-costs, the savings can be shared between professionals and organisations involved. An example of a shared savings contract applied in a population-based integrated care approach is that of Gesundes Kinzigtal in Germany [113].

Several blended payment systems can be identified that are complemented with pay-for-performance financial incentives to improve quality of care and control costs. There is evidence that the success of such arrangements depends on the details, such as the choice of quality indicators, the definition of the targets (absolute, relative, mixed), the size of the bonus or perhaps the penalty, and the receiver of the bonus/penalty (the individual provider or group of providers/organisation) [23, 24].

To avoid providers running higher risks for treating persons with multi-morbidity, it is of great importance that there is adequate adjustment for differences in case-mix − this may also reduce adverse selection and cream-skimming. Such risk adjustment is particularly relevant for payment systems based on patient or population characteristics like capitation, bundled payment, and population-based payments [33]. Without adequate case-mix adjustment in integrated care, especially for persons with multi-morbidity, there is the potential of 'upcoding', that might allow a provider to spend more time and resources on such complex cases. This is important to consider and underlines the importance of appropriate monitoring and data collection.

It has been argued that a basic level of financial security ('secured budget') for provider organisations is necessary to ensure a sustainable commitment to providing person-centred integrated care for persons with multi-morbidity [33, 36]. This may require longer-term contracting. Part of this is the recognition that not only the costs of routine delivery of integrated care should be covered, but also the costs of development and implementation. It helps if there is a clear business-case for each provider that accounts for economies of scale and scope [22].

3.2.5.3. Macro

The specific provider payment systems discussed above are embedded in a national or regional financial system for health and social care. Governmental recognition that innovative payment systems can be developed specifically to stimulate integrated care is important, because that may stimulate more systematic development, research, and evaluation of such systems. When distributing scarce resources at macro-level, governments can decide to prioritise developments that benefit integrated care for multi-morbidity, including an increased focus on prevention and community resources [11, 31, 87]. Ensuring equal access and safe-guarding equity is a macro-level responsibility that can be taken up by generous coverage and specific action plans to reach out to individuals from lower socio-economic classes who suffer from more morbidities but may be more difficult to reach. Furthermore, stimulating investments in innovative care models, such as those spanning across health- and social care or start-up funding's, maybe needed at a national or regional level.

3.2.6. Technologies & medical products

This component is closely tied to the 'Information & research' component. The difference is that the current component stresses the need for technologies & medical products to be developed, user-friendly, and available to support care processes. The next component (Information & research) stresses using the collected information successfully in the care process, and conducting research.

3.2.6.1. Micro

Information and communications technology (ICT) can be a facilitator of integrated and coordinated care, but is not necessarily a prerequisite [32, 71]. The use of technology should be tailored to the multi-morbid person's abilities. Examples of ICT applications at the micro level include electronic medical records (EMRs) and patient portals. EMRs are pointed out in the literature as being supportive in facilitating information exchange between professionals, organisations, patients, and informal caregivers [37, 85], linking clinical and management information [49], improving communication [84], allowing for flexible access to up-to-date data [49, 74], proactively finding persons with multi-morbidity [39, 46], tracking progress and change [46, 49, 60], and providing reminder prompts [60]. Patient portals can promote self-management and prioritization [37, 72]. As ideally patient portals should be linked to EMRs, agreements need to be made with the patient about which professionals have permission to access the EMR [39].

E-health tools or telemedicine can contribute to the ability of persons with multi-morbidity to live an independent life in their own home with improved distant care facilities [34]. For persons still living

at home this can include assistive technologies such as activity observation or fall detection [114]. Furthermore, e-health tools often aim to improve and monitor self-management, for example via web-based and telephone consultations, reminder systems [for medication intake], and remote monitoring of clinical indicators such as blood pressure, blood sugar, muscle strength, oxygen level, and lung function [83, 110, 115, 116].

3.2.6.2. Meso

Considering the multiple providers and care settings involved, a shared information system (e.g., EMRs including care plans) that is accessible by multiple professionals can greatly facilitate communication, person-centeredness, tailored care, and care coordination [16, 21, 48, 51, 62, 74, 111, 115]. Such shared information systems can support continuity of care between organisations and throughout the care process [41, 74, 81, 87, 117]. The different ICT systems used by different organisations involved in the care process of a person with multi-morbidity underline the need to develop interoperable systems or linked information systems.

3.2.6.3. Macro

Nationwide policies that foster technological development and innovation, especially with regard to ICT and e-health will likely benefit integrated care for multi-morbidity [34]. Furthermore, the availability of and equitable access to technologies mentioned before (e.g., remote monitoring systems, internet in rural areas) as well as other innovative and effective medical products (e.g., personalized medicine, miniaturized pace makers, insulin pumps, pharmaceuticals, imaging technologies) are important to improve the quality of life of persons with multi-morbidity [31].

3.2.7. Information & research

3.2.7.1. Micro

Individual level data should be effectively used in the care process. Specifically for continuity of care this can include notifications of emergency department visits to the core team of professionals [71] and sharing medicine-related information [78] and information about hospital discharge is shared with primary care providers and pharmacists [114]. Collected data can be used for individual risk prediction that can contribute to pro-active care with early treatment. Examples of how technology can aid this include a ‘patient journey record’ in which early detection of adverse changes can prompt care [118] and computerized algorithms that recommend care pathways [51].

3.2.7.2. Meso

When information is shared and used by multiple persons and providers, data ownership and protection need to be considered. Linked information systems whereby different professionals or care organisations have different levels of access to data depending on the case at hand could be considered. There are also more pragmatic approaches such as having professionals posted at one-another's sites to allow for access.

Information collected may further be used for risk stratification both at the individual and group level. Triage systems and predictive modelling, for example based on EMR and questionnaire data, can stratify patients into different levels of complexity in order to match care and estimate future care needs [81, 86]. Such stratification can also inform future capacity planning [38, 71] and budget planning [33].

Innovative research [methods] in the field of integrated care and multi-morbidity could assist in increasing the evidence-base of complex interventions and bringing research findings into practice [57, 103]. In order to adopt a holistic approach to individuals with multi-morbidity in research, using a life course perspective [119] or applying sequence clustering might be interesting future directions [120]. Different integrated care programmes for multi-morbidity exist (see Struckmann et al., submitted), however, evaluation methods are heterogeneous and findings mixed [10, 56, 102]. Attributing causality is difficult in evaluations of such complex interventions where there are frequently no control groups or standard outcome indicators [32, 87, 91, 97]. However, advanced statistical analyses and innovative study designs are being proposed to improve the evidence-base. Multidisciplinary research is called for that incorporates the perspectives of different groups of stakeholders, such as persons with multi-morbidity and their informal caregivers [12, 97, 105]. There is also a need to develop indicators that are particularly relevant for the care of persons with multi-morbidity, for example indicators related to the level of integration between health and social care, continuity of care, and polypharmacy.

3.2.7.3. Macro

Alongside data ownership at the meso level, privacy and data protection legislation with regard to information sharing between multiple organisations is an important consideration [34]. Furthermore, policies that stimulate research in the field of integrated care and multi-morbidity (e.g. national research programmes) can benefit innovation, care, and ultimately persons with multi-morbidity. Access to information may be an important issue in particular for persons with multi-morbidity. Disease-specific information can be easily found on the internet, but information on

navigating the care system (e.g., who to see when and for what, who is responsible, what is [not] covered in an insurance package) is more difficult to find and is in turn important for motivation, adherence, and self-management. The media may be an increasingly important means to promote access to information and promoting health literacy.

3.2.8. Monitoring

An important element that relates to the six components and in particular to information and research, is monitoring of the triple aim of integrated care, i.e., simultaneously improving population health, improving patient experience, and reducing cost (increase) [121, 122]. Monitoring can take place at the core of the framework, and the micro, meso, and macro levels and can function as a means of providing feedback and stimulating constant improvement [19, 21]. At the core and micro levels, this can pertain to pro-active monitoring of changes between face to face encounters [88, 115] and the monitoring of care plans [73], self-management [82], clinical indicators [79], and preferences [66]. Monitoring these factors repeatedly can ensure that care remains tailored and matches needs [45, 66, 104]. At the meso level, continuous monitoring using a quality improvement system can aid performance-based management and pay-for-performance, and can provide information on organisational and structural integration that may lead to optimization in processes [31, 68]. At the macro level, monitoring can support information on the workforce-demography match and provide epidemiological data on the prevalence and incidence of multi-morbidity in society.

4. Discussion

The framework presented in this article structures relevant concepts and elements of integrated care for multi-morbidity that were identified in the literature and through international expert meetings of five stakeholder groups, i.e., patients, partners and informal caregivers, professionals, payers, and policy makers. By connecting concepts and grouping them into six components with three levels per component, and adding and highlighting issues particularly relevant for multi-morbidity, a comprehensive framework that will hopefully show to be applicable in different contexts was developed. The concepts at each level and within each component should contribute to the development and (re-)organisation of integrated care models. Integrated care, as the framework shows, is not a noun, but instead is an active process that spans across different healthcare sectors (e.g., primary, secondary, tertiary), between health- social- and community sectors, and can also go beyond these to include churches, employers, housing, local communities, and education.

The framework can be used as a starting point to systematically describe integrated care programmes for multi-morbidity (micro-meso) and their respective target groups (the core) within their respective contexts (meso-macro). Such structured descriptions can aid comparison across programmes by making variations at all levels and components explicit and can provide input for designing evaluations of integrated care programmes for multi-morbidity. As can be seen by the length of the descriptions and number of references per component, level, and concept described in the framework, most findings in the scientific literature pertained to the core, micro levels, and the service delivery component. Much less literature was found on macro level legislation and policies to support integrated care and on financing. This could be due to the broad search terms used, but also reflects that these topics are less frequently addressed in the scientific literature. Furthermore, as the scientific literature search was restricted to the English language, national policy described in non-English journals may be missing. However, the grey literature and stakeholder advisory board meetings allowed for cross-national insights on all concepts of the framework. We consider the use of multiple methods in the development of the framework a major asset to this study. A further strength of the presented framework is that concepts at the macro level are described that are relevant in integrated care for multi-morbidity, these can be considered when addressing transferability and [larger-scale] implementation.

It is important to note that the framework does not constitute a set of evidence-based guidelines on how to design the ideal integrated care programme for multi-morbidity, nor is it a recipe for reform. We explicitly choose not to try to weigh the importance of various concepts in the framework because the strength of evidence varies. Moreover, the appropriate mix of components in integrated care is largely driven by the local context, the existing health and social care service delivery system, the existing barriers and the specific political, legal, and financial constraints, at all levels of the framework. We do note, however, that normative statements are made − some concepts are generally seen as relevant and important in integrated care.

Throughout the iterative process of developing the framework, several topics led to debate, for instance on the expected role of the individual with multi-morbidity and the informal care-giver throughout the care process. We decided to highlight the importance of understanding the entire situation of the individual with multi-morbidity, including his/her social network, and subsequently tailoring care as appropriate.

Furthermore, there was some debate as to whether concepts included in the framework should be evidence-based. We realized, however, that the body of literature on the effectiveness of integrated care programmes for multi-morbidity was still too limited. We therefore decided to include concepts

that were deemed relevant based on experts' opinions or because a logical mechanism of action was presented.

Fortunately, the interest and evidence in this field is growing rapidly. We conducted an updated search for the period between October 2015 and March 2017 in one database, i.e., PubMed, which resulted in 330 new hits, and 17 potentially relevant articles. These articles seem to reiterate and support the concepts already high-lighted in the SELFIE framework. We plan to update the SELFIE framework in the future. This will be done on the basis of the grey and scientific literature, as well as on the evaluations of 17 integrated care programmes for multi-morbidity that are currently being evaluated in the SELFIE project.

Parallel to the development of our framework, the Multi-morbidity Care Model was developed by the EU Joint Action JA-CHRODIS [123, 124]. This model identifies 16 components of integrated care for multi-morbidity which are all covered in the SELFIE frame-work. The SELFIE framework includes a wider range of concepts and structures them in a different form and encompasses an explicit layering of the micro, meso, and macro levels. Both the SELFIE framework and the JA-CHRODIS model provide important insights for the development, organisation, and evaluation of integrated care for multi-morbidity.

5. Conclusion

The presented framework builds upon existing frameworks on integrated and person-centred care and systematically addresses integration of care at the micro, meso, and macro level according to the six key [WHO] components. The framework's usability will be tested in describing various integrated care programmes for multi-morbidity in eight European countries and will guide the development of an analytical evaluation framework for these programmes.

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Kapitel 6

How to strengthen financing mechanism to promote care for people with multimorbidity in Europe?

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1. Introduction

Although estimates vary from country to country and across studies, they show similar trends regarding the rising prevalence and burden of multimorbidity in European countries [5-8]. The growing burden of multimorbidity, which tends to be more common among older people, poses a threat to population health in Europe and can be considered one of the greatest challenges to the sustainability of health systems worldwide [9-12]. The complexity of health needs for people with multimorbidity, in combination with increasing frailty because of old age, requires a long-term response coordinated by different health professionals [13]. The growing prevalence of people with multimorbidity also poses new challenges to health financing in terms of [5] adequate sources of funding and [6] provider payment mechanisms [14]. Therefore, it is important to mobilize sustainable funding sources and to develop and implement effective and sustainable provider payment mechanisms that fulfil the requirements of improving quality of care for patients with multimorbidity and promoting better care coordination and integration. Payment systems can create powerful incentives for care providers and influence the delivery of integrated care [15]. Traditionally, each care provider is paid separately, which means that there are no incentives for providers to coordinate their care. However, almost all countries have experimented with payment mechanisms that aim to overcome perverse incentives, that could lead to for example duplicate tests or excessive referrals. Yet there is no single best or most commonly used payment mechanism to finance integrated care for people with multimorbidity and, despite their increasing number, evidence on the effectiveness of interventions to improve the quality of care is limited [8].

What is the policy question?

Health financing plays a key role in the development of comprehensive health care delivery models and can promote collaboration between multiple providers and higher quality of care for patients. This Policy Brief seeks to inform and help decision-makers to overcome some of the challenges involved in financing integrated care for people with multimorbidity. These include identifying and mobilizing sustainable resources to pay for care, and adjusting payment schemes in Europe to provide incentives that better facilitate integrated care for people with multimorbidity. Therefore, the overall question is: *How to strengthen health financing to promote care for people with multimorbidity in Europe?*

This Policy Brief argues that adapting the financing system to integrated chronic care models that address multimorbidity requires meeting three key conditions: (1) funding should come from a sustainable source, (2) payment mechanisms should provide incentives for providers both to

collaborate and to provide high-quality care, and (3) payment mechanisms should adequately account for the complexity of treated patients. Therefore, the following three sub-questions will be answered within the brief:

- What is the best way to secure stable funding in the short, medium and long term?
- What payment mechanisms are available and have been used to integrate care for people with multimorbidity?
- Which payment approach is best to facilitate and/or stimulate the development of integrated care of good quality for people with multimorbidity?

For policy-making, insights from practice and from scientific literature are useful and provide information on health care changes that can lead to more patient-centred integrated care. Therefore, this Policy Brief also uses observations collected as part of the ICARE4EU project. The rapid review of the literature focused on identifying publications addressing the use of financing mechanisms in promoting coordination of care across organizational boundaries, collaboration between professionals and professional competences. This was carried out in the context of care integration in general and patients with multimorbidity in particular (see Appendix).

Under the ICARE4EU project, information was gathered on 101 innovative care programmes in 24 European countries, 8 of which were visited to obtain a more in-depth understanding of their particular characteristics. Appendix provides detailed information on this research into innovative care programmes in European countries.

Box 6.1: Methods

2. Findings

This Policy Brief provides insight into funding options and payment mechanisms for integrated chronic care programmes for people with multimorbidity. Both the rapid literature review and the survey data show potential to improve current practices as funding sources have often run out in the absence of a long-term strategy and there is scant use of innovative payment mechanisms to integrate care and take multimorbidity into account.

2.1 Funding options for integrated chronic care programmes for people with multimorbidity

The first set of questions that needs answering when an integrated chronic care programme for people with multimorbidity is developed is where the funding should come from. This includes initial funding for development costs, which may be substantial and increase with a programme's

complexity (especially relevant in case of multimorbidity). Then, when the programme is up and running, administrative costs apply and providers have to be paid. Literature addressing resource mobilization mostly focuses on the macro level of the health system rather than on the issue of which sources are most sustainable at the level of certain care programmes.

Findings from the ICARE4EU project show that the funding sources of integrated chronic care models for people with multimorbidity have very different approaches. Start-up funding for development and piloting often comes from governments, purchasers or providers, or a combination of these three. For example, the Finnish POTKU (Putting the Patient in the Driver's Seat) project was initiated using two separate grants (for 2010–2012 and 2013–2014) from the KASTE development programme of the Ministry of Social Affairs and Health. The Danish clinic for multimorbidity at Silkeborg Regional Hospital received start-up funding from the regional government and contributes part of its own budget. The Dutch INCA project's first phase was funded by the Ministry of Health, Welfare and Sports through the National Programme of Disease Management of Chronic Illnesses, while the next phase was funded by health insurers and providers. The German Gesundes Kinzigtal Project is the initiative of a private company and a network of physicians and therapists, and they secured funding, including longterm funding, from a German sickness fund, while another fund joined at a later stage.

When a programme becomes operational, most projects use public funds from the usual care system. But some projects have to rely on different sources because they cannot secure access to the usual care funds. For example, the POTKU project relied on grant money and when this money ran out, the programme also stopped, even though evaluations were positive. Although a POTKU II project is now operational, it shows the importance of addressing the medium- and longterm funding issue right at the start of a project. One of the advantages of having a care purchaser on board, as with the Kinzigtal and INCA projects, is that it is more likely that a project will be funded over the medium and long term, especially if results are promising. Governments willing to foster such programmes could consider creating funding mechanism with built-in avenues that eventually lead to inclusion in the usual care system and access to its funding.

2.2 Payment mechanisms and incentives for integrated chronic care programmes for people with multimorbidity

Providers delivering integrated care for people with multimorbidity can be at all levels of the health system, from primary care providers to specialist hospitals, and they can be paid on the basis of different mechanisms. Ideally, provider payment mechanisms: (1) motivate actors within the system

to be productive in terms of number of cases treated and services provided; (2) avoid incentives that would lead to risk selection, which is a particular concern for people with multimorbidity; (3) contribute to overall health system efficiency, for example, through avoiding unnecessary services, and expenditure control; (4) are administratively easy; and (5) encourage providers to achieve optimal care outcomes.

Table 6.1 and Box 6.2 summarize the desired and undesired consequences of the most common payment mechanisms used in both ambulatory and inpatient care with regard to these objectives. The extent of the effects is not clear and, in fact, two Cochrane reviews [16, 17] found that the available evidence is surprisingly weak. Nevertheless, although most studies are not specific to providers in integrated care, there is broad consensus in the theoretical and empirical literature on the broad direction of effects different payment mechanisms may have [16, 18-21]. Two observations stand out: first, all payment mechanisms provide conflicting incentives for "productivity" and "expenditure control"; and, second, no payment mechanisms explicitly provide incentives for higher quality of care.

Fee-for-service (FFS) systems are frequently used in ambulatory care and involve paying for each unit of service provided (the amount of the fee often depends on the type of service provided). This generally incentivizes providers to provide as many reimbursable services as possible [23, 24]. Therefore, FFS payment mechanisms create the potential for inappropriate or unnecessary use of services and have poor incentives for expenditure control [25]. In addition, providers have no incentive to coordinate their care if this would demand the provision of fewer services.

A capitation payment entails giving providers a fixed amount to provide services to patients for a particular time, irrespective of the volume of services consumed by individual patients. It generates an incentive to provide as little care as possible to each patient as the providers bear the financial risk. This in turn may create the potential for underuse of services, increasing referrals and the adverse selection of low-risk patients [23, 25, 26].

For hospital services, global budgets and DRG-based (diagnosis related group) case payments are typical forms of payment (FFS is little used in Europe). *Global budgets* are administratively simple and control expenditure, but could discourage productivity while disregarding patient needs, appropriateness and quality of care, and therefore outcomes. *DRG-based case payment* systems provide stronger incentives for production but, in their "pure" form (i.e. based on diagnosis only with weak or no consideration of complications and procedures), run the risk of equally disregarding patient needs and appropriateness [27]. Finally, because the incentives provided by *salaries* for physicians or *per-diem payments* for hospitals are only moderate in nature, these payment mechanisms have neither strong advantages nor strong disadvantages.

Box 6.2: Most common payment mechanisms

Payment mechanisms	Productivity		Avoidance of risk selection	Expenditure control	Adminis-trative simplicity	Quality of care
	Number of patients or cases	Number of services per patient or case				
Physician payment (ambulatory care)						
Fee-for-service	+	+	+	-	-	0
Capitation	-	-	- (if not casemix-adjusted)	+	+	0
Hospital payment (inpatient/outpatient)						
Global Budget	-	-	-	+	+	0
Case payment	+	-	- (if insufficiently casemix-adjusted)	0	-	0
Per diems	0	0	0	-	+	0

Table 6.1: Basic forms of payment mechanisms and their expected incentives in regard to selected objectives

Source: Authors' compilation, based on [19, 22]
Notes: +/- = incentive in positive or negative direction, 0 = no incentive in either direction (or dependent on specific details of implementation

2.3 A framework for understanding payment mechanisms and incentives

There are at least three dimensions of payment systems, which largely determine incentives in the system: (1) the information basis to determine payment, (2) the scope of payment (what is included) and (3) the quality of the care provided (also see Fig.6.1).

The *first dimension* relates to the information basis that determines the payment. In other words: what are we paying for? Fig. 1 illustrates that payment mechanisms can, in theory, be based on information about provider characteristics (A), service characteristics (B) or patient/population characteristics (C) [28].

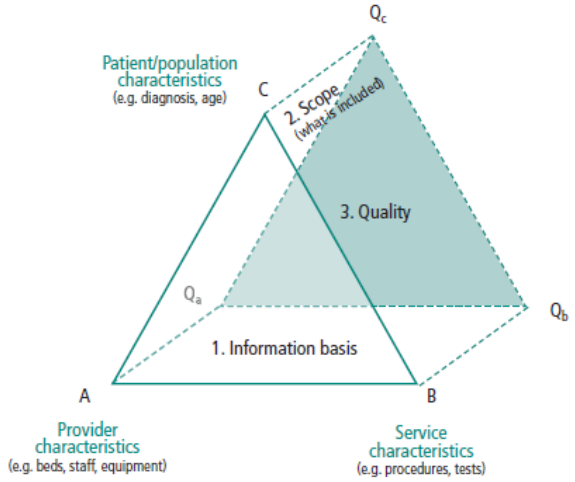

Fig.6.1: A framework for understanding incentives of different payment mechanisms

Source: Based on [28]

Global budgets are usually determined on the basis of provider characteristics (A), for example, the number of beds, staff or available equipment – and the incentive is therefore to increase the number of beds, staff or available equipment. Pure FFS payments consider only information about the services provided (B), such as their complexity or costs. Because FFS pays providers to provide services, the incentive is to provide a high number of services. By contrast, capitation payments or case payments (such as DRGs) rely primarily on information about patient or population characteristics such as diagnoses and age (C). Consequently, payments based on patient or population characteristics carry incentives to treat a high number of patients (or to register a large part of the population) but to limit the services per case (per registered person). In practice, payment systems often rely on multiple sources (Box 6.3) because such blended payment systems provide a more balanced set of incentives.

In order to balance the different types of incentives, payment mechanisms can be defined on the basis of different types of information. For example, FFS payments may be adjusted for the qualifications of staff, for example, fees for case management performed by staff with special training in case management may be higher than fees for staff without this training. Similarly, case payments per patient are often adjusted in relation to the services provided to the patient. For example, DRG-based case payments take into consideration not only information on patient characteristics (e.g. a heart attack of a patient with multiple comorbidities) but also on service characteristics (e.g. percutaneous coronary intervention performed on that patient). Finally, budgets are often adjusted for the number and complexity (i.e. the casemix) of treated patients or they are adjusted for the casemix of the catchment population. Consequently, hospitals or other providers are paid not only for "being there" but also for treating patients and for providing care to patients that have complex conditions as measured by DRGs or other measures of casemix.

Box 6.3: Using multiple sources of information in blended payment systems

The *second dimension* is related to the scope of the payment. It can range from narrow, that is, each provider and each service is paid for separately, to very broad, that is, there is only one "bundled payment" for one patient, which includes all services provided by all providers during a specified time period. All payment mechanisms can be narrow or broad. For example, a capitation payment for a General Practitioner (GP) may include only the first visit of a patient in a quarter with certain additional visits and services (e.g. vaccinations, ultrasound exams) being paid for separately – or all visits of a patient during an entire year, including all ancillary services needed by the patient during the year. Similarly, FFS payments can exist for very narrowly defined services (e.g. each ward round, each lab test, each surgical procedure), or they may be defined very broadly (e.g. all physician services needed for a hip replacement). Often authors use the term "bundled payment" when they describe a payment that is broader than payment under the (previous) system [29-31]. However, in order to understand the incentives of the payment system, it is important to clearly assess the breadth of the "bundled payment", that is, who the providers are, what the services are, and the time frame covered by the payment.

The *third dimension* refers to the question of whether quality is taken into account. In particular, when the scope of payment is broad, for example, there is only one bundled payment for a period of time, it is important that quality is ntaken into account in order to avoid providers skimping on mquality, disregarding patient needs and providing fewer services than necessary. Mirroring the information basis for payment, quality can be assessed and paid for in relation to structural (*Qa*), process (*Qb*) or outcome (Qc) characteristics.

2.4 What is payment based on in practice?

The ICARE4EU survey found that in 73 of the 101 identified programmes, payments are the same as for usual care. Only 27 programmes have developed payment schemes specifically adapted for this particular programme (one programme did not specify). Furthermore, the findings suggest that there seem to be no payment mechanisms in use specifically developed to foster integrated care for people with multimorbidity.

Payments depend on different factors and there is no dominant method. Payments depend most frequently on the type of provider (e.g. a budget or a fixed allowance for participating), followed by the number/type of patients (e.g. capitation payments or casemix-based payments), and the type of service (e.g. fee-for-service – FFS), and "other" factors. For example, the Gesundes Kinzigtal in Germany uses the time required per patient, which can be seen as mix between type of service and type of provider. The Dutch INCA project uses a casemix based on a patient risk profile (based on the

number/type of patients). Few programmes were paid depending on certain (quality) indicators being achieved. The INCA model (implemented in 2016) is one of the few programmes that take the severity of a patient's condition (which includes multimorbidity) into account, as it intends to use payment mechanisms based on two segments. One is based on the casemix of the population through several care modules that each reflect different levels of severity; the other segment is based on the achieved outcome of integrated care delivered to patients.

Policy-makers often assume that an "integrated" payment will promote integrated care, and automatically lead to better health outcomes and lower costs [32]. However, only 10 programmes identified in the ICARE4EU project use some form of bundled payments for either all or a share of the providers; most are paid separately. The size of the payment is mostly based on fixed prices/agreements and almost never on negotiations. Only four programmes report that active negotiations take place between payers and providers.

Specific financial incentives could serve as motivators and can be used to stimulate and control provider and patient behaviour; in contrast, misaligned incentives could even create an obstacle to the implementation of interventions [23, 33]. The ICARE4EU findings show that, currently, there is much greater scope for introducing more elaborate and sophisticated incentive schemes.

In 32 of the 101 programmes, additional resources are made available to providers that should incentivize providers to participate in the programme or to undertake certain tasks. For example, some programmes pay providers to participate in multidisciplinary meetings. Other programmes provide additional payments for preventive services or finance start-up costs for a new group of providers. Still others provide specific payments for the coordination of care or finance additional staff. Providers in the Gesundes Kinzigtal (GK) programme receive extra payments for services provided that are documented via the central ICT tool and their time spent on additional services provided and follow up (Box 6.4).

The Gesundes Kinzigtal programme's financial goal is to improve the margin for the contracting sickness funds (AOK and LKK). Achieving this involves realizing savings within the Kinzigtal region in relation to German "standardized" costs and a reference period prior to the intervention. Standardized costs are average costs across all sickness funds. They are used in the so-called risk structure compensation mechanism, which allocates money from the central allocation pool. Since 2009, allocations for each individual are based on age, sex and marginal expenditures for one of 80 diseases as coded the previous year [34].

The contracts between Gesundes Kinzigtal GmbH (company) and the two sickness funds are based on the virtual budget of each fund's total allocation from the central allocation pool; "virtual" because the money is

not actually passed through to providers, who continue to receive their reimbursements from the sickness funds as usual. The financial result is measured by the total expenditure for the insured Kinzigtal population both within and outside partner institutions compared to the allocation from the pool. If the sickness fund spends less than it receives, the gain is shared between the fund and Gesundes Kinzigtal [13].

Innovative financial models like a shared-savings contract are still uncommon in Europe, although the financial result has proved reliable. In 2010 the per capita expenditures of an LKK policy holder in the Gesundes Kinzigtal programme relative to those in the control group have decreased about 16.9% since 2005 [35, 36]. Results of an internal evaluation of the AOK and Gesundes Kinzigtal over the period 2006 to 2013 show that the programme has led to a net annual saving for the sickness funds of close to 3% (after having shared the 6.5% surplus difference with Gesundes Kinzigtal). In 2012, the relative cost reduction that can be allocated to the activities of the programme amounted to around 7.9% [37].

Box 6.4: The Gesundes Kinzigtal – population-based financing with a shared-savings approach

Of the 101 programmes, 21 use incentives for patients to participate. These include free access to treatment, free medical and social services, a free general health check as well as free self-tests and additional preventive care. In some of the programmes patients are provided with equipment/devices for telehealth and receive free home visits if necessary.

2.5 Potential for savings?

Forty-five programmes report achieving savings, of which 16 programmes share these savings among care providers. Savings reportedly result mainly from (1) reductions of utilization and costs (emergency care/acute care visits), (2) increased multiprofessional collaboration, (3) the use of new technologies, and (4) the reduction of polypharmacy. Programme managers report improved cooperation among health professionals, medical and non-medical professionals and the work in multidisciplinary teams as having contributed most to the savings achieved. Case managers who are responsible for the patient and the planning of the care process (e.g. with a care plan) are often part of such teams. Programme managers refer to different types of technologies that contributed to savings, supporting either the patient or the provider. Electronic health records and eHealth protocols are most frequently mentioned, allowing better and safer management of patients and improved communication among providers. Polypharmacy is a well-known problem for patients with multimorbidity. Several programmes use drug monitoring, coordinated pharmaceutical management and regular patient medication reviews to reduce polypharmacy. This reduces the risk of further complications and adverse side effects, and thereby reduces overall costs [38].

3. Discussion

3.1 How to improve payment mechanisms to stimulate integrated care for people living with multimorbidity?

Based on findings from the ICARE4EU project and the framework shown in Fig. 1, it is possible to think systematically about the adjustments to basic payment mechanisms that are necessary to support high-quality integrated care for people with multimorbidity. Table 2 provides a summary of various options for the adjustment of basic payment mechanisms, illustrating that all payment mechanisms can be adjusted to (1) promote coordination and ultimately integration of care, (2) to better account for multimorbidity and (3) to encourage a high quality of care. Payment mechanisms included in Table 2 can be combined in various ways: first, basic payment mechanisms can be combined with each other in order to balance incentives; second, each basic payment mechanism can be combined with different adjustments to promote integration, to take into account multimorbidity, and to enhance quality – based on patient, service or provider characteristics; although some combinations appear more likely than others.

3.2 Payment adjustments to promote better coordination and integration of care

Programmes that adjust payment to promote better coordination of care are often called *pay-for-coordination* (P4C) initiatives [39]. One example would be a primary care provider receiving a capitation payment per registered patient, who could receive an additional service-based payment for performing a comprehensive case review (review of documents from other providers) or for documentation activities (for other providers) to support better coordination of care. However, as shown in Table 6.2, the adjustment could also be made on the basis of provider characteristics, for example, by adjusting the primary care provider's budget to cover the cost of employing a case manager. Similarly, capitation payments could be adjusted (higher payments for each registered patient) for providers with case managers.

	Provider characteristics	**Patient/population characteristics**	**Service characteristics**
Basis payment mechanism	Budget	Capitation, case payment	Fee-for-service
Examples			
1. To promote coordination ↓ To pay for integration (bundled payment or shared	Budgets for multidisciplinary teams (e.g. including a case manager)		P4C activities (e.g. case review, documentation, participation in meetings)
	Higher capitations for providers with multidisciplinary teams participation in meetings) (e.g. with case managers)		
	Budgets for integrated	One capitation or case	One fee for multiple

savings)	care structures (one budget for multiple providers)	payment for multiple providers	services performed by one or multiple providers (e.g. one fee for a particular type of surgery, including all related services)
	Payments defined based on patient, service and provider characteristics (e.g. one payment for a patient with a heart attack, including a specific set of services provided during six months after the initial event by a hospital, rehabilitation providers and ambulatory physicians)		
2. To better account for multimorbidity	Higher budgets for providers with professionals trained in multimorbidity	Comprehensive casemix adjustment of payments, explicitly taking multimorbidity into account	Pay for patient education and counselling, pay for polypharmacy review
3. To enhance quality (for above/below average performance or for performance improvements)	Bonus/penalty in relation to meeting structural quality indicators, e.g. proportion of staff with certificate of training in multimorbidity	Bonus/penalty in relation to mortality, complications or patient satisfaction (after careful adjustment which takes multimorbidity into account)	Bonus/penalty for proportion of patients treated in line with guidelines, proportion of patients with multimorbidity having had a biannual polypharmacy review

Table 6.2: A framework of adjustments to basic payment mechanisms that can potentially support high-quality integrated care for people with multimorbidity

Source: Authors' compilation

These approaches all have in common that providers receive additional money for better coordination of care. However, P4C does not provide incentives for providers to coordinate their care in a way that could lead to a reduction of health care expenditures, for example, by avoiding duplicate tests or unnecessary hospitalizations. In order to achieve this aim, providers have to be given the opportunity to jointly benefit from efficiency gains. There are two basic approaches that allow providers to benefit from efficiency gains: (1) shared savings models, and (2) bundled payments. However, both of these approaches are considerably more complicated to implement than P4C because they require organizational changes that go far beyond the modification of the payment system and because they imply a transfer of financial risk from the payer(s) to the provider(s).

A *shared-savings model* implies that each individual provider continues to be paid according to the established payment system. However, all costs for patients participating in the integrated care programme are registered and retrospectively compared to historic figures or a benchmark, which enables the payer to determine if savings have been made. Participating providers agree to cooperate in a network and to collaborate with the aim of achieving joint savings for the care provided to participating patients. Of course, the providers, patients and services eligible for participation in the programme have to be explicitly defined before the start of the programme [40].

If total payments for participating patients are below the benchmark, which can be a historical time trend (i.e. expected expenditures if the shared-savings model had not been implemented) or a regional/national average of payments for comparable patients, a share of the realized savings is distributed to providers. The Gesundes Kinzigtal described in Box 5.4 is one example of a sharedsavings model, but there are many more operating in the United States of America, which have been further stimulated by the 2010 Affordable Care Act and extensively described in the literature [41-43].

Usually, shared-savings models require a new organizational structure in order to (re)distribute savings across participating providers and to help with the coordination of care. Moreover, the (re)distribution mechanism is extremely important as it may determine the success of the programme and the extent to which providers in the network actually collaborate, and coordinate and reorganize care processes in order to achieve savings. For example, if regular checkups by primary care providers can reduce the need for visits to secondary care providers, the redistribution mechanism has to make sure that both providers benefit from a reorganization of care, that is, the secondary care provider must be compensated for the loss of revenue and the primary care provider for the increasing workload. Furthermore, the new organizational structure can play an essential role in achieving improvements in the coordination of care, for example, by facilitating the development of joint clinical pathways or joint EMRs.

Bundled payments constitute an even more radical change of the payment system than a shared-savings model because they transfer considerable financial risk from insurers to providers [44]. In such approaches, providers are exposed to the full financial risk if treatment costs for their patients are above the amount that they receive through the bundled payment. For example, a negotiated bundled payment covering all ambulatory care costs of diabetic patients as, for example, in the Netherlands [30] may be below the actual costs of the provider network responsible for the provision of care. Because of the financial risk involved in bundled payment approaches, organizational structures with sufficient resources accepting the financial risk and acting as general contractors of care are even more important than they are in shared-savings models.

In theory (see Table 2), bundled payments can be defined on the basis of provider, patient or service characteristics, or on the basis of a mix of these three. Because the incentives depend on the type of information that is used to define the bundle, blended payments defined on the basis of all three types of information provide a more balanced set of incentives.

The effect of a “bundled payment” on care integration depends on the exact scope of the payment in terms of included providers, services and time, for which a payment is made. In general, the broader the scope of the payment, the greater the incentive for integration of care. However, a broader scope also implies a greater degree of financial risk for the contractor because health care costs for broad bundles of care (covering extended periods of time and various services provided by various providers) exhibit a large degree of variation. In fact, this is a problem with particular relevance for patients with multimorbidity because the complexity of their needs means that health care costs can exhibit even larger variation than on average in the population. Very large organizational structures, with sufficient financial reserves, are necessary in order to assume the large degree of risk associated with broad bundles of care. Therefore, the introduction of a bundled payments always has to consider the existing provision structure and the availability of suitable contractors to accept the financial risk involved with the introduction of bundled payments.

Conceptually, the broadest conceivable bundled payment is one where a single payment covers all care provided to all patients living in an area over a defined period of time. However, this type of payment would be usually called a broad capitation payment or a population-based budget. Payment would not be made to individual providers but to large-scale health care organizations (e.g. Health Maintenance Organizations in the United States of America) organizing and paying for all care needed by the adherent populations. This means that the question of how to pay providers and to assure coordination of care is simply transferred from the payer to another organization, which then becomes the payer for individual providers.

3.3 Payment adjustments to take multimorbidity into account

Payments can be adjusted in various ways in order to take multimorbidity into account. One option is a provider-based adjustment, where, for example, providers employing personnel with special training in caring for people with multimorbidity receive a larger budget. Another option is that payments are made for special services required by people with multimorbidity. For example, an additional fee can be paid to pharmacists performing a polypharmacy review. Both options can be implemented relatively easily in combination with other payment approaches to promote coordination or integration of care.

However, one particularly important adjustment required for taking into account multimorbidity is comprehensive casemix adjustment. This is because casemix adjustment assures that different payment mechanisms account for the complexity of different types of patients. People with multimorbidity have particularly complex care needs, often requiring more resources than other

people. If payment mechanisms do not adequately account for this increased complexity, providers treating a higher share of people with multimorbidity are not adequately rewarded for their greater efforts. Consequently, in the absence of adequate casemix adjustments, there are incentives for providers to engage in risk selection, that is, to select comparatively healthier people – and to avoid those with multimorbidity.

Casemix adjustment has traditionally been applied to payment mechanisms based on individual characteristics, that is, capitation and case payments, because these payment mechanisms provide strong incentives for risk selection (see Table 1). For example, in England, capitation payments for GPs have been adjusted for many years on the basis of the Carr-Hill formula [45], and capitation payments to Health Maintenance Organizations in the United States of America are adjusted on the basis of the Centers for Medicare and Medicaid Services Hierarchical Condition Categories (CMSHCC) model [46]. Similarly, hospital case payments around the world are adjusted on the basis of DRGs (see [27]). In fact, casemix systems have been developed to account for the complexity of patients treated by various providers (including psychiatric hospitals, long-term care providers, outpatient providers) and also for entire populations [47].

With increasing prevalence of multimorbidity, it becomes ever more important to adjust payments for the casemix of treated patients. For example, provider-level budgets should be adjusted for casemix in order to assure that providers (primary care providers, hospitals, long-term care facilities) with a larger share of patients with multimorbidity receive a larger budget. Similarly, FFS-based systems might require casemix adjustment, if services are defined only by service characteristics (B in Fig. 1), for example, one fee for a clinical examination (regardless of whether this is performed on a person with or without multimorbidity). It is possible to refine FFS systems by incorporating individual characteristics into the definition of the service (e.g. by introducing different fees for a physical examination of a person without multimorbidity and for a person with multimorbidity). Alternatively, an FFS payment can be combined with a casemix-adjusted capitation payment.

Clearly, the need for casemix adjustment increases with the scope of the payment. Broader payments – covering longer periods of time, stretching across more providers, and/or including more services – require better casemix adjustment than narrow payments. This is because the care costs of broader bundles exhibit larger variations of health care costs. It is particularly difficult to define broad bundles of care for people with multimorbidity because the multiple conditions require treatment that leads to particularly large variation in treatment costs. Therefore, while people with multimorbidity may benefit greatly from better integrated care resulting from broader payments,

they are also the ones most likely to suffer from risk selection if bundled payments do not account for the greater complexity of treatment through adequate casemix adjustment.

3.4 Payment adjustments to promote quality

Table 5.1 showed that none of the traditional payment mechanisms provides direct incentives for quality of care. Payment systems can be adjusted to incorporate incentives for quality but a precondition is that quality is reliably measured. Quality measurement can focus on structures, processes, and/or outcomes [48]. If quality can be reliably measured and if quality attainments can be attributed to providers, it is possible to provide incentives that encourage providers to achieve better quality of care.

Different options for adjusting payments in relation to quality of care for people with multimorbidity are summarized in Table 2. For example, providers with good structures in place for the care of people with multimorbidity (e.g. employing personnel with special training in multimorbidity, case managers) can receive a bonus, possibly calculated as a percentage of their usual income (independent of whether this is based on budgets, FFS or capitation). Alternatively, providers could receive a bonus if their care processes are in line with recommended treatments for people with multimorbidity (e.g. if they follow treatment guidelines or if they perform a biannual polypharmacy review). Finally, payment could be adjusted in relation to the achieved outcomes of care (e.g. if mortality is below average, if the number of avoidable hospital admissions is low, or if patients are particularly satisfied with their care). Designing adequate incentives through payment adjustments is quite complicated because there are many options concerning the measurement of quality (e.g. which indicators to use and how), the definition of targets (e.g. absolute targets or relative targets), the level of the payment adjustment (e.g. individuals, groups, institutions), the form of the incentive (bonus or penalty), the use of risk adjustment and so on [49].

However, measuring and incentivizing quality of care is likely to be particularly important when payments are broad, as is the case with shared-savings models, bundled payments or broad capitation payments made to integrated care structures. This is because broader payments provide larger incentives for providers to reduce costs – and, in the absence of adequate mechanisms to monitor and reward quality, providers may attempt to cut costs by reducing the provision of services, disregarding patient needs and providing lower quality care.

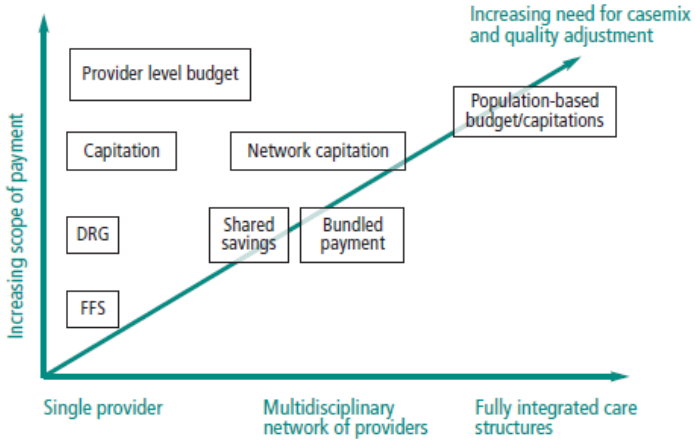

Fig. 6.2: Relationship between the scope of payment, care integration, casemix and quality adjustments

Source: Based on [49, 50]

Fig. 6.2 summarizes the discussion about the relationship between the scope of payment and the increasing need to adjust for casemix and quality, which is particularly important in the context of patients with multimorbidity. Fig. 2 also suggests a hierarchy in the complexity of payment systems that could serve as a roadmap for countries that have more basic payment systems to incrementally develop towards more complex payment mechanisms.

4. Limitations

The ICARE4EU survey findings indicate that there is unexploited potential for the promotion of better care integration for people with multimorbidity in Europe. It shows that while some countries are already implementing integrated care programmes with a focus on patients with multimorbidity, only a limited number of programmes are using innovative payment mechanisms to improve care integration. However, the lack of more widespread adoption of innovative payment mechanisms is likely to be related to the greater complexity of appropriately designing such systems, their potential for unintended consequences, and a lack of government strategy.

An all-encompassing conclusion is difficult to draw, as the comprehensiveness of the ICARE4EU survey cannot be guaranteed. First, the ICARE4EU project relied on country experts to identify all integrated care programmes and to collect all the relevant information, which leaves the possibility that not all programmes were found and relevant information collected. Furthermore, the very technical questions in the financial section of the survey assumed a very detailed theoretical understanding of payment mechanisms, which appears to have been overambitious. Lastly, ICARE4EU applied strict inclusion criteria (see Appendix), which may have led to the exclusion of programmes with potentially interesting and innovative financing mechanisms.

5. Policy implications

Generally, policy-makers need to look for ways to foster the development of integrated care programmes specifically designed for people with multimorbidity. This can be achieved by providing funding mechanisms that guarantee short- and longer-term options or the prospect of rapid inclusion in the usual care system and access to its funds. In return, policymakers need to demand continuous evaluation over a long period to generate conclusions about the effectiveness of active programmes and add to the evidence base. This means that future programmes need to be developed in ways that allow comprehensive and rigorous evaluations.

More specifically, innovative payment mechanisms need to be developed, which are tailored to the specific characteristics and goals of a programme as well as the local context and national health system in which they operate. Some good examples are available but there is no single solution. Nevertheless, some elements seem instrumental. Payment mechanisms for integrated care for people with multimorbidity should provide incentives for providers to collaborate and adequately account for the complexity of cases treated. Innovative payment and incentive systems that could potentially be used to promote integrated care include (1) P4C, (2), shared-savings models and (3) bundled payments – in combination with the existing more traditional payment mechanisms that are operational in a given country (e.g. budgets, capitation, DRGs and FFS). In addition, P4P can be used to provide incentives for better quality of care, measured in terms of structure, process or outcome quality. Moreover, several of these approaches can, or rather should, be combined. For example, an existing payment system (e.g. capitation or FFS) can be combined with (a) an additional FFS adapted to the care needs of people with multimorbidity (e.g. review of their medication plan or holistic assessment of their needs), (b) P4C (e.g. participation in multidisciplinary meetings) and (c) performance-based remuneration for specific simple quality characteristics (e.g. the documentation of achieved goals). By contrast, the introduction of shared-savings models or bundled payments is much more demanding, requiring integrated care structures, sophisticated methods of casemix adjustment and well-functioning systems for monitoring quality of care.

Participant characteristics have to be defined before designing an integrated care programme for people with multimorbidity. Applicability in current delivery systems has to be considered while designing an integrated care programme – as there is no unique or best way of adapting a payment system to become more encouraging and supportive in multimorbidity care. However, policy-makers should be aware that several preconditions need to be met when developing more complex payment schemes that better account for multimorbidity. These include effective information systems that collect meaningful data on quality and cost (e.g. in order to enable payment

adjustments for quality of care), large provider organizations with sufficient reserves to assume some financial risk (e.g. under bundled payment programmes), and strong leadership and governance structures at national but also at programme level. It also implies that countries where such preconditions are lacking may be better advised to focus on refining their current payment mechanisms and the aforementioned preconditions before, for example, implementing bundled payment or shared-saving schemes, let alone population-based payment.

Lastly, if integrated care programmes for people with multimorbidity are implemented effectively, the findings from the ICARE4EU project and the literature suggest that they can save money and control costs. Evaluations of several programmes, some externally evaluated, some only internally evaluated, indicate that the use of innovative technologies, increased multiprofessional collaboration, and polypharmacy management can lead to savings. However, more evidence is needed to back up these findings.

6. Conclusions

The literature and the findings from the ICARE4EU project in themselves do not lead to an easy conclusion about how to redesign payment and incentive mechanisms. They also do not suggest a standard method that could be used. There is not one model addressing all specificities of the targeted population, the involved providers or the health care systems they operate in. In order to improve the financing of integrated care for people with multimorbidity across the European Union, more evidence is needed. Despite the increasing number of people with multimorbidity, there are surprisingly few studies about how different payment mechanisms can improve care for chronic diseases, and reviews confirm a shortage of evidence about the economic effectiveness of integrated care programmes for people with multimorbidity. Research examining the effects of different incentives on provider behaviour with respect to people with multimorbidity is urgently required. Robustly evaluated integrated care programmes are important in order to evaluate their effectiveness, to justify the investment and to verify their potential for implementation.

In light of the current evidence base, this brief describes policies that aim to combine different, existing payment mechanisms to better fit the characteristics and needs of people with multimorbidity. The need to incorporate the element of cooperation/integration and quality into the payment system is also noted. This framework seeks to capture the complexity of developing a payment mechanism for providers of integrated care for people with multimorbidity. Policy action needs to be correspondingly comprehensive and create an environment that fosters finding

solutions to adequately care for a growing population that has multimorbidity and complex care needs.

7. Appendix Kapitel 6

Rapid review of the literature

The literature that was included in this Policy Brief was collected from various sources. First, international policy and strategy documents directed at multimorbidity care, integrated care, and/or financing of integrated care were identified. Second, we performed a targeted search for international scientific literature in PubMed and Google Scholar. Finally, grey literature was searched by hand on the internet, which identified publications that reported on the results of integrated care interventions for people with chronic conditions and/or people with multimorbidity and financing mechanisms for integrated care and or care for people with multimorbidity. Documents were collected via PubMed and journal web sites, as well as web sites of the WHO the King's Fund and the European Commission. A survey among the project partners and the utilization of their networks of contacts also yielded additional papers and reports.

Selection of innovative approaches in European countries by the ICARE4EU project

In 2014, data on innovative care approaches at a national, regional or local level were collected via country expert organizations in 31 European countries. These organizations were asked to search for and report on all integrated care programmes that focus on multimorbidity within their 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, an online questionnaire, available in 11 languages, was provided to managers of the 101 selected programmes to collect detailed programme characteristics and outcomes.

Next, these 101 programmes were evaluated by the project team. 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) its innovativeness in financing mechanisms for integrated care services, as 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 long list of 25 programmes that had high scores. The second evaluation of these 25 programmes was based on the 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 short list 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:

- They were 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.
- They involved 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).
- They have some formal status/formalized cooperation (any form).
- They will be or have been evaluated.
- They are currently running (2014), or finished less than 24 months ago or start within the next 12 months.

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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 adressed from the following perspectives: patient- centredness [1], use of e-health technology [2], integration [3] and financing systems [this one]. 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.

Kapitel 7

Towards incentivising integration: A typology of payments for integrated care

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Abstract

Traditional provider payment mechanisms may not create appropriate incentives for integrating care. Alternative payment mechanisms, such as bundled payments, have been introduced without uniform definitions, and existing payment typologies are not suitable for describing them. We use a systematic review combined with example integrated care programmes identified from practice in the Horizon2020 SELFIE project to inform a new typology of payment mechanisms for integrated care. The typology describes payments in terms of the scope of payment (Target population, Time, Sectors), the participation of providers (Provider coverage, Financial pooling/sharing), and the single provider/patient involvement (Income, Multiple disease/needs focus, and Quality measurement). There is a gap between rhetoric on the need for new payment mechanisms and those implemented in practice. Current payments for integrated care are mostly sector- and disease-specific, with questionable impact on those with the most need for integrated care. The typology provides a basis to improve financial incentives supporting more effective and efficient integrated care systems

1. Introduction

There is a general policy consensus that current models of care are not adequate for addressing health system challenges faced globally [1]. Ageing populations and rising levels of multimorbidity are increasing demand for services across sectors of care. This increases the risks of fragmented or conflicting treatment with potential for inefficiency and for harm [2, 3]. Concurrently, healthcare budget restraints in light of financial crises and concerns over long-term fiscal burden have created a move towards 'integrated care', which are "structured efforts to provide coordinated, pro-active, person-centred, multidisciplinary care by two or more well-communicating and collaborating care providers either within or across sectors" [4].

Just as existing care models may not be well suited for dealing with current health system challenges; current payment mechanisms may not create appropriate incentives for providing integrated care. In particular, 'traditional' modes of healthcare payment such as fee-for-service (FFS) and other activity-based payments reimburse single units of care, reflecting the traditional focus of the healthcare system of dealing with discrete onsets of acute illness. It has been argued, that chronic illness, as opposed to acute illness, requires a long-term perspective with on-going preventative management, which is not incentivized by these traditional payment mechanisms [5]. In addition, the conventional way of paying separate providers differently depending on sector does not incentivise professional collaboration and care coordination, and may even be perceived as a barrier to the integration of care [6]. The expected rise in numbers of patients with multimorbidity, frequently requiring care from multiple providers across the health and care system, makes these matters even more complex and pressing.

Quinn recently classified the payment mechanisms commonly used in healthcare into eight basic methods based on unit of payment (see Table 7.1) [7]. However, neither Quinn's classification nor other existing typologies [8, 9] describe in detail these payment mechanisms in terms of the extent to which they stimulate care integration

Units of Payment	Common term *(integration-specific term)*
1. Per time period	Budget and salary
2. Per beneficiary	Capitation
3. Per recipient	Contact capitation
4. Per episode	Case rates, payment per stay, and **bundled payments**
5. Per day	Per diem and per visit
6. Per service	Fee-for-service, ***pay-for-performance*, pay-for-coordination***
7. Per dollar of cost	Cost reimbursement
8. Per dollar of charges	Percentage of charges

* More generally applied than purely integrated care, but performance measures can also be specific to integration

Table 7.1: Eight basic healthcare payment methods as described by Quinn [7], with integrated care payment approaches in bold (and those not referenced specifically by Quinn in *italics*) [10]

This lack of clarity becomes particularly apparent for the alternative payment models developed specifically to stimulate integration of care (see Table 1) [10]. These new terms are currently being used without any agreed meaning or definition. Loosely defined, bundled payments are a single payment to fund a pre-defined set of services by multiple providers for a specific (group of) patient(s), pay-for-performance (relating to integrated care) are payments for processes and outcomes of care for chronic diseases, and pay-for-coordination are specific payments to coordinate care [10]. But, for example, a bundled payment can mean payment covering a single episode of care, or care over a defined time-period [11]. They may also only cover care for a single disease [12], or all of a patient's care in a single or over multiple care sectors (e.g. primary and/or secondary care)[13, 14].

Bundled payments, and other payments that also aim to further integrate care, cannot be fully described and do not fit neatly within existing typologies [7-9]. Neither is it possible to assess on which aspects these payments differ from traditional payment mechanisms in terms of hypothesised effects on integration using these existing typologies. Therefore, policymakers and designers of payment methods cannot explicitly explore their options and current trends in incentive approaches.

This study aims to:

- Systematically search the literature to identify alternative payment mechanisms aimed at incentivising integration of care.
- Develop a typology to describe traditional and alternative payment mechanisms in terms of their expected impact on integration.
- Illustrate this typology by describing and comparing alternative models of paying for integrated care in selected US Medicare and European examples of 'bundled payments'.

Our study is conducted within the context of SELFIE a four-year EU-funded Horizon2020 project (Grant Agreement No. 634288). One of the aims of SELFIE is to provide evidence-based advice on financing and payment methods with adequate incentives to implement integrated care.

2. Materials and methods

2.1 Identification of current payment mechanisms for integrating care

For a broader overview of conceptual and empirical approaches to payment for integrated care reported in the current literature, we systematically searched eight scientific databases ((i) Medline, (ii) Medline in process, (iii) CINAHL, (iv) HMIC, (v) Econlit, (vi) EBM Reviews, (vii) Embase, and (viii) PsycInfo), supplemented by a grey literature search within selected sources up to January 2017. We combined search terms for synonyms of "payment or financing schemes" and "integrated care" (papers had to deal with both concepts to be included). We adapted the searches to the specification of each database (see Appendix for full details of search and screening strategy). We excluded editorials, letters to the editor, commentaries, conference abstracts, non-English language articles, those where no full text was available, payments aimed only at those under 18, and where the target population included only those with an acute or communicable disease. Two authors (VS and SF) independently screened the literature in a two-step approach (1. title/abstract screening, 2. full-text screening), with agreement reached by discussion.

Using a standardised extraction template, we first extracted general information on the publication (e.g. authors, country), and methods (e.g. study design, target group). In a second step, information specifically pertaining to the study aims was extracted: details of the payment mechanism applied, whether it replaced or supplemented an existing model, the scope (patients, time, geography etc.), incentives explicitly outlined (e.g. for coordination, collaboration, treating complex patients, for quality improvement etc.), extent of integration (horizontal or vertical), any unintended incentives discussed, funding source (e.g. usual care budget or targeted source of funding), details of

performance monitoring, impact, and mechanisms enabling or hampering success. Data was extracted by four reviewers (VS-SF, JS-SK) who worked in pairs to extract relevant information from the publications. We carried out a qualitative synthesis of results using a scoping study framework which resembles the analytical stage of qualitative data analysis, describing and categorising approaches of the payment mechanisms identified and considering the implications of the findings within the broader policy context adding meaning to the results [15]. Comparing and contrasting individual payment mechanisms, we constructed common conceptual domains that the incentive changes were targeting to influence integration. These formed the basis for our typology.

We supplemented the literature search with examination of current practical implementations. In Europe, eight countries (Austria, Croatia, Germany, Hungary, Netherlands, Norway, Spain, and UK) involved in the EU's Horizon2020 SELFIE project were each asked to identify the most promising two/three integrated care programmes aimed at multimorbid patients in their country (see Appendix for programme selection criteria and details of the programmes included). We combined financing data from the qualitative 'thick descriptions' (a combination of document analyses and interviews with several stakeholders) of each programme [16], with a diagram where each research group detailed all payers/payees involved in the programme, and the specific payment mechanisms used to pay in each of these relationships.

2.2 Creating the typology

Systematically compiling and comparing current approaches to incentivise integrated care provided us with additional insight into how approaches could be differentiated in a meaningful way, with thematic analysis allowing us to identify important domains. We initially extracted details from the systematic literature review using a standardised extraction template. Through thematic analysis of these results we developed an initial typology outline. With the addition of the practical implementations, we developed this outline iteratively with the authors reflecting on the domains and the potential impact on integration of each through group discussion. Drawing from these discussions and the authors' own experience of integrated care and payment systems research (e.g. through the ICARE4EU and SELFIE projects)[6, 16], we proposed a typology to better differentiate between these payments and to describe their potential impact on integration of care.

To illustrate use of the typology, we applied it by comparing the 'bundled payments' identified within two of the Dutch SELFIE programmes with those being used in US Medicare (drawing on information from the Centers for Medicare and Medicaid Services [17]). We choose these specific examples to illustrate the diversity of integration incentives that can be delivered under the 'bundled payment' label, and to exemplify the ability of the typology to differentiate these.

3. Results

3.1 Current payment mechanisms for integrating care

3.1.1 From the literature

The systematic search of the literature yielded in total 15849 records. 113 full texts were screened, with 85 eliminated for having: no chronic disease focus (n=32); no payment mechanisms described (n=14); no integrated care focus (n=15); presenting only conference abstracts or other excluded study types (n=13); where no full text was available (n=8); or otherwise not meeting our selection criteria (n=3). After removing duplicates and two rounds of screening 28 articles remained for the analysis, supplemented by a further four articles retrieved through the grey literature search (see Appendix for study selection flow chart). These articles described five conceptual payment approaches and 28 unique empirical approaches.

Payments aiming to improve integrated care were introduced across multiple health systems. The majority were described in the USA (n=15), Canada (n=2), the Netherlands (n=2), the UK (n=5), Germany (n=2), and other European countries (n=6).

3.1.1.1 Conceptual

Five conceptual suggestions for alternative payment mechanisms were described including bundled payments [18], capitated payments involving multiple sectors and providers within a geographical area [19-21], and blended payments involving a combination of bundled payments, pay-for-performance and shared savings approaches [22]. These conceptual articles tended to describe more ambitious population-based approaches than we identified in the literature describing empirical mechanisms.

The most comprehensive approaches that were identified were described as 'global budget capitation' [19, 20], based on a relationship where a provider is reimbursed on a capitation basis for the health and care needs of an entire population, frequently accompanying organisational single provider (either as a fully integrated body, or through alliances/networks) formation, e.g. accountable care organisations.

3.1.1.2 Empirical

Those empirical payments referenced many of the alternative integrated payment mechanisms described above [10], i.e. bundled payments (particularly in the Netherlands) [6, 12, 23-30], pay-for-

performance (in the USA and some European health systems) [23, 24, 31-34], and pay-for-coordination (identified in some European health systems and the USA) [6, 23-26, 35].

Some traditional provider payment mechanisms were also substituted for others to incentivise integration. For instance, capitation-based payments were those most commonly described in the literature from the USA (and Canada) [31, 36-45], frequently replacing FFS, activity-based payment.

Payments varied in target group and scope of care coverage. For example, many had disease-specific target groups (e.g. diabetes, mental health problems) and only covered care for that specific condition [12, 23-25, 27-33, 35, 41, 43], while others had a broader focus (e.g. multimorbidity or chronic diseases more generally, frail elderly or high-cost patients, and a few took a whole population-based approach) [6, 23-26, 31, 34, 36-40, 42, 44-47].

Payments also varied by time horizon, from a single episode of care, monthly or quarterly [23-25, 30, 37-40], up to annual (or more) payments [6, 12, 23-31, 34-36, 41, 43, 47].

Some payments covered only horizontal integration [12, 23-25, 27-32, 35, 36, 41, 45] (i.e. care within a single healthcare sector, e.g. primary care) and others covered broader vertical integration [6, 23-26, 31, 33, 34, 37-40, 42-44, 46, 47] (e.g. care over multiple sectors including primary, secondary and social care [48]).

Beyond the provider payments themselves, pooled budgets and/or shared savings (between a group of multidisciplinary providers) were introduced as an additional financing mechanism applied in addition to existing provider payment mechanisms (Germany and the USA) [6, 23-26, 35, 47]. These are designed to incentivise co-ordinated care at the lowest appropriate level, theoretically turning attention to a prevention-based approach. Innovative direct patient payment approaches, where the patient manages their own budget for their health/care needs, so called personal budgets (UK) [38, 46], were another example of alternative financing mechanisms (prior to the payment of providers).

3.1.2 From practice

Of the 17 European integrated care programmes examined within the SELFIE research project, only six included an alternative payment mechanism. These approaches clustered across three countries (in line with the macro level policies of each country). In the Netherlands we observed bundled payment approaches, while in the United Kingdom and Germany, we observed pay-for-coordination with some pooling of budgets/shared savings to incentivise provider risk sharing.

3.2 A typology of payments for integrated care

The typology describes payments in terms of eight dimensions. As highlighted above, payments vary across:

- The scope of payment: Target population, the target population that the payment covers; Time, the period of time that the payment covers; Sectors, the number of health and care sectors (e.g. primary/secondary/social care) covered within the payment, i.e. whether it incentivises horizontal or vertical integration;
- The participation of providers: Provider coverage, the extent of total providers within the sectors (and geography) covered by the payment; Financial pooling/sharing, extent to which providers share risk and reward, incentivising interdependency issues to be addressed, e.g. through pooling funding/shared savings;
- The single provider/patient involvement: Income, the proportion of the providers' total income that is attached to the payment, i.e. a measure of how much 'skin they have in the game'; Multiple disease/needs focus, the extent of an individuals' total potential health and care needs (i.e. services) covered by the payment; and Quality measurement, the holistic nature of the measurement that the payment/quality measures account for, e.g. measured on a single measure of the care process (which may or may not affect the patient outcome) or more holistically accounting for the final outcomes of the patient.

On each dimension, we described a payment as incentivising low, medium or high levels of integration (see Table 7.2). We described payments within the geographical limits of the defined integrated care programme.

Category	Level of integration Domain	Low integration [1]	Medium integration [2]	High integration [3]
Scope of payment	**Target population**	Payment covers one specific group e.g. 'high-risk'	Payment covers slightly wider defined group e.g. over 65 s	Payment covers all patients in catchment area
	Time	Payment covers one contact	Payment covers multiple contacts e.g. during an episode of care	Payment covers care over a longer period e.g. a year
	Sectors	Payment covers care delivered by single sector e.g. primary care only	Payment covers care delivered by two sectors e.g. primary and social care/ primary and secondary care	Payment covers care delivered by three or more sectors e.g. primary, secondary and social care
Participation of providers	**Provider coverage**	Payment covers one provider only within the participating sectors e.g. a single GP practice within primary care	Payments covers care at multiple providers within the participating sectors e.g. all primary care providers and a proportion of secondary care providers	Payment covers care at all providers within the participating sectors e.g. all primary and secondary care services within the area
	Financial pooling/ sharing	No pooled funding/ shared savings for providers	Proportion of budget is pooled/savings shared for the defined horizon for providers	Total health and care budget is pooled/savings shared for the defined horizon for providers
Single provider/ patient involvement	**Income**	Payment provides a small proportion of providers' total income	Payment provides a relatively large proportion of providers' total income	Payment provides the largest proportion of providers' total income
	Multiple disease/ needs focus	Payment covers care for one condition for a single patient e.g. diabetes care only	Payment covers care for multiple conditions for a single patient e.g. all chronic condition care	Payment covers all care for a single patient e.g. all health and social care needs
	Quality measurement	Payment measures/ rewards process measures e.g. number of health checks	Payment measures/rewards intermediate measures and lifestyle behaviour e.g. HbA1c, smoking	Payment measures/ rewards health outcome measures e.g. Quality of life

Table 7.2: Typology of payments for integrated care. The number in [ ] indicates the score in terms of level of integration, as described below

By ranking payment mechanisms (low to high integration) on the eight domains above, different payment mechanisms can be compared in terms of their expected effects on integration.

3.3 Applying the typology

To illustrate use of our framework, in Fig. 7.1 and Table 7.3 we compare the payments described in the two Dutch SELFIE programmes and those from US Medicare, thus comparing three versions of payments all commonly labelled as 'bundled'. Applying our typology allows differentiation of the models in finer detail.

The Medicare Bundled Payments for Care Improvement (BPCI) approach aims to link previously separate payments received within a single illness or course of treatment. The initiative is hospital-focused, with some models also combining some post-acute care. The approach is currently focused on 48 unique clinical episodes, mostly single disease- (e.g. acute myocardial infarction, diabetes), or procedure-focused (e.g. knee procedures, pacemaker replacement) [17].

Fig. 7.1: Comparison of three payment approaches termed 'bundled payments' in the Netherlands and US Medicare using our typology, applying scores as detailed in Table 7.3, below. The larger area covered within the spider diagram, the higher level of integration theoretically incentivised.

Dimension	Dutch – diabetes	Dutch – fail elderly	Medicare - BPCI
Target Population	Covers care only for diabetes patients [1]	Covers care for frail elderly patients only [1]	Care episodes for patients with (individually) one of 48 diagnoses or procedures and Medicare insured [1.5]
Time	Fees negotiated per patient per year [3]	Fees paid for 3-month periods [2]	Per episode of care (with one model also up to 90 days post-acute) [1.5]
Sectors	Primary care only in care groups. They can also subcontract (e.g. dieticians) [1]	All primary care, but very small amount of secondary (geriatrician telephone consult) [1.2]	Hospital-centred [1]
Financial pooling/sharing	Only care group shares in risk/reward [1.5]	Only care group shares in risk/reward [1.5]	Hospitals offer physicians gain sharing arrangement where they benefit from reduced hospital costs [2]
Provider coverage	Care groups select multiple, but not necessary from all, provider organisations [1.5]	Pilot, limited number of care groups [1.3]	Per hospital, piloted [1]
Income	No detailed info, but since a single disease the providers are treating, bound to be a small % of total population [1]	Frail elderly up to 1% of practice's total patient population [1]	Up to 30% of Medicare payments tied to ACOs or bundled payment arrangements [1.5]
Multiple disease/needs focus	Comprehensive diabetes care covered, but not care for other conditions [1]	All primary for any condition and small bit of secondary care (Geriatrics consult) covered, but not other care, e.g. emergency secondary care [2]	Only covers specific conditions / procedures [1]
Quality measurement	Paid for guideline components of care, e.g. check-ups, testing [1]	Payment on basis of number of case management meetings etc. performed [1]	Payment adjusted based on comparison with aggregated averages, e.g. length of stay together with a risk threshold [1]

Table 7.3: Comparison of three payment approaches termed 'bundled payments' in the Netherlands and US Medicare using our typology. In square brackets, low integration is scored as 1, with high integration scored as 3.

The three bundles pay almost exclusively for sector-specific care (primary care in the Netherlands, and secondary care in US Medicare). They mostly provide a small amount of an individual's total (potential) care needs, mostly disease- or procedure-specific (with the frail elderly bundle slightly more comprehensive, covering all conditions in primary care and including some Geriatric telephone consulting care, for instance). As expected, the two Dutch bundles have more similarities with each other than with the US model, with the Medicare bundle covering comparatively shorter time horizons, but with a slightly larger target population, gain-sharing arrangement for practitioners (financial pooling/sharing), and contributing to provider's total income to a larger extent.

4. Discussion

4.1 Summary

From our findings in the current literature and the practical examples, we find that there is comparatively little action to date, despite the rhetoric on the importance of new payment mechanisms for implementing integrated care [49]. The few payment mechanisms that have been implemented appear to be mostly disease- and sector-specific, compared to the ambitious whole population-based approaches described in the conceptual literature. Therefore, their adequacy to provide incentives for high quality care for those in most need for integrated care, e.g. frail elderly and people with multimorbidity, is questionable [50].

Detailed reporting on alternative payment mechanisms in the current literature is lacking across a number of important domains. The typology we present might therefore be helpful for addressing this reporting in future work, allowing better comparative analysis on the effectiveness of different approaches.

4.2 Limitations of the study

While our findings and typology are based on a large systematic review supplemented with practical examples from thick descriptions of 17 integrated care programmes for people with multimorbidity in the EU, there are nevertheless likely to be payment mechanisms used in practice that have not been identified. Our search terms may also have missed alternative payments that did not specifically target 'integrated care' (or one of the synonyms we searched), for example those labelled as 'value-based payments' instead, or those accompanying wider organisational reforms such as Patient-Centred Medical Homes or Accountable Care Organisations. However, we screened a large number of potentially relevant articles combined with grey literature searching to attempt to identify as many relevant payments as possible, and the typology is adaptable enough to allow for variations from current findings, as we illustrate in our application.

We suggest criteria for differentiating between low to high integration on each domain of the typology. However, these levels are not systematically quantifiable, so a qualitative decision needs to be made when reporting on or comparing between payment mechanisms. This perhaps leaves room for latent biases of those rating the payment mechanism, and raises questions over the likely replicability across different raters. We would therefore suggest that those using this typology justify explicitly and fully why they are scoring a certain domain at a certain level to assist in secondary analysis and interpretation.

4.3 Interpretation in the context of the wider literature

Our typology complements existing arrangement for reporting payment mechanisms [7-9]. Our work builds on these to describe specifically the likely impact on integration of care and allows finer-grained comparison with regard to this measure. The 'traditional payment mechanisms' are still likely to set limits on specific domains within our typology, however [9]. For example, FFS will always be activity-based so cannot obtain a maximum rating on our 'time' domain.

While our typology focuses on payment mechanisms, the wider literature also highlights the likely importance of different means of financing integration [49]. We have partially captured this importance in our 'financial pooling/sharing' domain. Other typologies [40], however, would provide a complementary mechanism for capturing this funding classification more fully.

Beyond payment mechanisms, there are also more general barriers/facilitators for integration [51], e.g. historical working arrangements between sectors/providers, information technology, professional engagement and shared values. The relative potential for impacts of payment incentives in this mix is debatable, particularly if implemented in the absence of other facilitating adaptations to specific characteristics of the local context and national health system.

4.4 Implications of the typology for policy and practice

If the typology we describe is used to design a new payment approach, it is important to recognise that there are other challenges to implementing new payments in practice. For example, additional case-mix (risk) adjustment may be needed to ensure that there is no adverse patient selection, and equity concerns are addressed (particularly for highly integrated payments aimed at whole populations, for instance, where there might be an unintended incentive to neglect complex high-cost patients).[52] Furthermore, many approaches require specific data for monitoring quality that may not be available, large provider organisations that can take on high degrees of financial risk that may not be available in a given country context, and policymakers to consider the legacy payment system(s) that they will build on or replace.

In practice, integrated care payments might form part of a wider blend of payments within the health system, as such blended payments might provide a more balanced set of incentives. Our framework is flexible enough to allow the description of single payment types and combinations of different payment types.

Policymakers or contractors have to accept certain (political and financial) risks associated with the introduction of new payments, and national policy direction is therefore likely to be a determining factor in what is chosen [6]. Therefore, we do not make a recommendation for what the 'best'

payment mechanism might be. Likewise, we do not make a judgement on what the most important domain(s) of the typology might be, as this will partially be determined by the specific aims of the incentives. A payment mechanism scoring 'high' across all domains might support more integration of care, but it might also face strong opposition because of higher financial risk to providers, for instance. This might require a trade-off in terms of what is valued by those designing the payment incentive, taking into account the local context and national health system characteristics.

There might be workarounds for the practical challenges we have listed above, for example, political will, creation of meso-tier organisations that bear risks, or use of shadow contracts to allow gentle introduction. Furthermore, with improved and standardised designing, reporting and monitoring of alternative payment mechanisms for integrated care, there would be more potential to optimise care for an increasing proportion of the population with complex needs [53]. While the rhetoric on payment mechanisms for integrating currently outweighs the implementation, this typology offers a starting point for improvement.

4.5 Unanswered questions and future research

Beyond designing and describing alternative payment mechanisms for integrated care, there is a need to examine their effectiveness [54]. Particularly, there is the need to examine effects on multimorbid populations. These complex patients are likely to experience the most negative effects of a fragmented care system [55], and where we might, therefore, expect any beneficial effects of our ability to incentivise integration to be greatest.

5. Conclusions

Designing and implementing appropriate payment mechanisms for integration of care is still at an early stage. The typology developed in this study provides a basis to (re-)design, compare, and monitor provider payments that incentivise more effective and efficient care systems.

6. Appendix Kapitel 7

Systematic search strategy (adapted to each individual database)

Component 1

"Reimbursement Mechanisms"[Mesh] OR "Healthcare Financing"[Mesh] OR "Fees and Charges"[Mesh]

OR

payment[Title] OR financing[Title] OR incentive*[Title] OR funding[Title] OR reimbursement[Title]) AND (mechanism*[Title] OR scheme*[Title] OR model[Title] OR method*[Title]

OR

reimbursement[Title/Abstract] OR cost reimbursement[Title/Abstract] OR prospective payment[Title/Abstract] OR fee for service*[Title/Abstract] OR capitation[Title/Abstract] OR pay for performance[Title/Abstract]

AND

Component 2

"Delivery of Health Care, Integrated"[Mesh]

OR

integrated[Title] OR comprehensive[Title] OR managed[Title] OR collaborative[Title] OR multidisciplinary[Title] OR interdisciplinary[Title] OR cross disciplinary[Title] OR intersectoral[Title] OR intrasectoral[Title]) AND care[Title]

OR

seamless care[Title(Abstract] OR holistic care[Title/Abstract] OR continuity[Title/Abstract] OR care continuation[Title/Abstract] OR case management[Title/Abstract] OR accountable care[Title/Abstract

Grey literature search results - databases

OECD:

- http://www.oecd-ilibrary.org/social-issues-migration-health/integrating-social-services-for-vulnerable-groups/integrating-care-for-the-frail-elderly_9789264233775-8-en
    - ➔ OECD (2015) "Integrating care for the frail elderly" Included

The Health Foundation:

- No matching results (may 2017)

WHO:

- http://www.who.int/bulletin/archives/78(6)830.pdf
  Sekhri, 2000. Excluded.

King´s Fund:

- No matching results (may 2017)

Worldbank:

- No matching results (may 2017)

IFIC:

- No matching results (June 2017) – all links to dropbox folders checked etc.

Grey lit. report:

- http://www.greylit.org/library/search#wt=json&facet=true&q=integrated%20care%20AND%20finance%20AND%20chronic&q.op=AND&fl=id&qt=dismax&sort=created%20desc&page=1&per_page=10&start=0&qf=full_text&facet.field=publisher&facet.field=full_subjects
    - ➔ Pdf: CDC HEALTH POLICY SERIES (2015) Included
- http://web.archive.org/web/20020419204405/http://www.chcs.org/publications/pdf/ips/CDM-report.PDF
    - ➔ CDM-report_2001 Included
- http://catalog.nyam.org/cgi-bin/koha/opac-search.pl?idx=kw&q=integrated+care&op=and&idx=kw&q=chronic+disease&op=and&idx=kw&do=Search&sort_by=relevance&limit=
    - ➔ Pdf: Not accessible and no English version available.

IMF:

- No matching results (june 2017)

Nuffield Trust:

1.Ham et al., 2011

Link: https://www.nuffieldtrust.org.uk/files/2017-01/1484821566_commissioning-integrated-care-in-a-liberated-nhs-summary-web-final.pdf

2. Bardsley et al., 2013

Link: https://www.nuffieldtrust.org.uk/files/2017-01/evaluating-integrated-community-care-web-final.pdf

3. Goodwin et al., 2012

https://www.nuffieldtrust.org.uk/research/integrated-care-for-patients-and-populations-improving-outcomes-by-working-together

1-3 excluded.

Open Grey:

- No matching results (june 2017)

The OAIster® database

- http://oaister.worldcat.org/title/integrated-care-achieving-better-coordination-of-care-for-the-chronically-ill-lessons-from-the-netherlands-bundled-payment-initiative/oclc/870426727&referer=brief_results
  - ➔ Dijk et al (2013) Excluded
- http://scholarworks.gvsu.edu/kcon_doctoralprojects/20/
  Madole, 2017. Dissertation. Excluded

OpenSIGLE

- No matching results (june 2017)

CADTH

- No matching results (june 2017)
  https://www.cadth.ca/resources/finding-evidence/grey-matters

RIVM (National institute for Public Health and the environment, NL):

Struijs et al., 2012 Link: http://www.rivm.nl/dsresource?objectid=99051d87-7b41-41aa-a886-965223b4a60b&type=org&disposition=inline Excluded

EU – projects:

ICARE4EU: Innovating care for people with multiple chronic conditions in Europe

- Struckmann et al., 2017Link:
  http://www.euro.who.int/__data/assets/pdf_file/0006/337587/PB_24.pdf?ua=1 Included.

SUSTAIN: Sustainable Tailored Integrated Care for Older People in Europe

- No matching results (june 2017)

JA-Chrodis: Joint Action on chronic diseases

- No matching results (june 2017)

Act@Scale: Advancing Care Coordination and Telehealth deployment at Scale

- No matching results (june 2017)

SCIROCCO: Scaling Integrated Care in Context
- No matching results (june 2017)

Smartcare Project: Delivering integrated eCare
- No matching results (june 2017)

CommonWell project: integrated telecare and telehealth services

- No matching results (june 2017)

Action Group B3: Replicating and tutoring integrated care for chronic diseases

- No matching results (june 2017)

Reference lists of included publications

- No additional matching result

Systematic review in/exclusion criteria

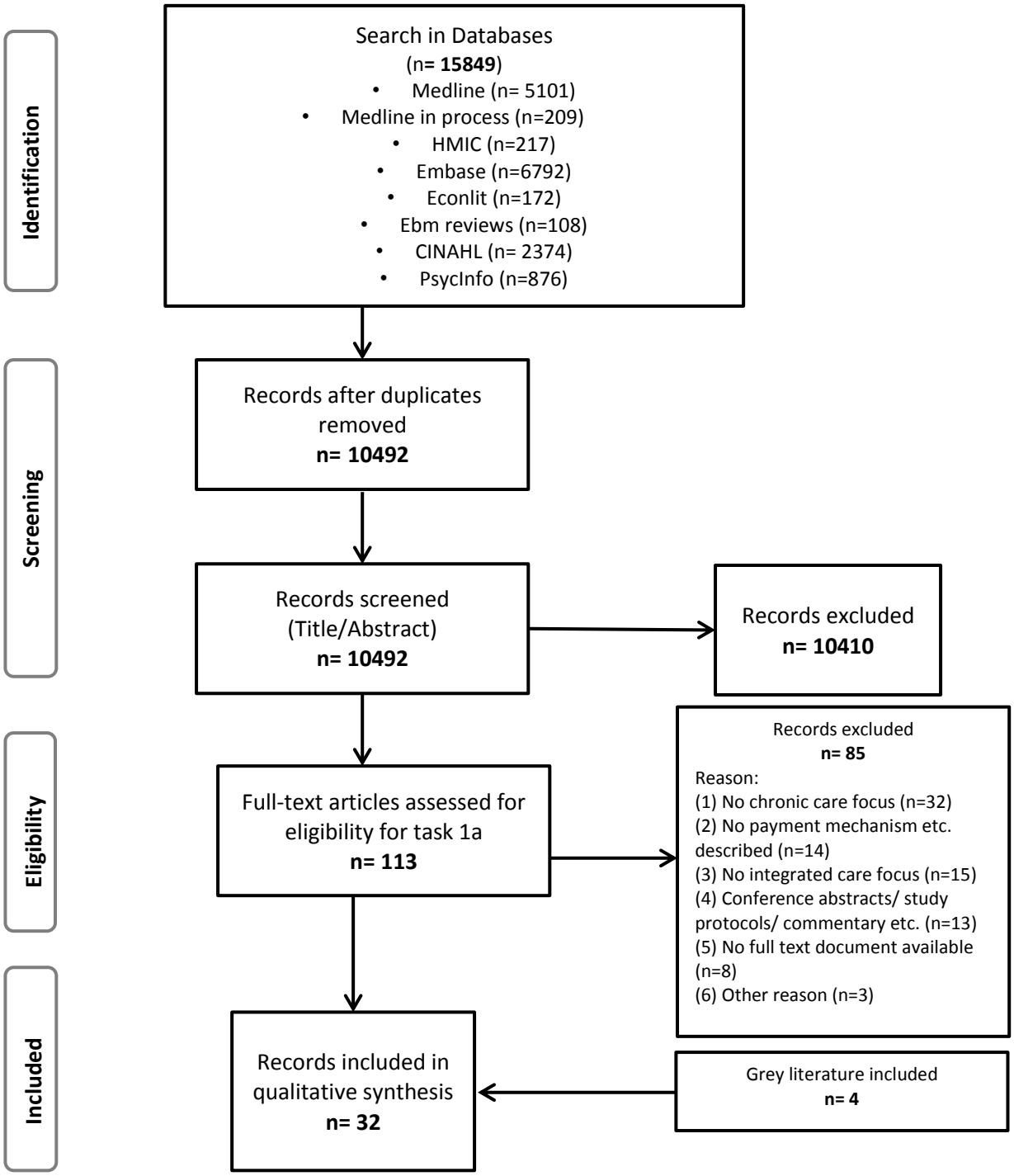
Inclusion criteria

1. Article deals with a financing or payment scheme, major forms of healthcare financing (e.g. fee for service), or financial incentives.
2. Article deals with how payment mechanisms relate to 'integration of care' (defined as structured efforts to provide coordinated, pro-active, person-centred, multidisciplinary care by two or more communicating and collaborating care providers. Providers may work at the same organisation or different organisations, either within the health care sector or across the health care, social care, or community care sectors (including informal care)).

Exclusion criteria

1. Editorials, letters to the editor, commentaries, conference abstracts.
2. Non-English language.
3. No full text available.
4. The target population includes only persons aged 18 years or younger.
5. The target population includes only persons suffering from acute or communicable diseases.

Flow chart of the publication selection process during the systematic literature search



SELFIE - Programme selection criteria

Purpose: To select most promising integrated chronic care (ICC) programmes targeted at or treating individuals suffering from multi-morbidity.

Operational definition: multi-morbidity
Multi-morbidity in the context of our project refers to multiple (i.e. at least two) chronic conditions, physical or mental, occurring in one person at the same time, where one is not just a known complication of the other. Individuals with such multiple chronic conditions are expected to benefit from integrated management. Management in this context refers to prevention, diagnosis, treatment, rehabilitation or social or psychological interventions.
Operational definition: ICC
Integrated chronic care (ICC) in the context of our project refers to structured efforts to provide coordinated, pro-active, person-centred, multidisciplinary care by two or more communicating and collaborating care providers that may work at the same organization or different organizations, either within the healthcare or across the health care, social care, or community care sector (including informal care).

Inclusion criteria

1.Programme is developed to manage multi-morbidity (or includes elements addressing multi-morbidity issues in its population)

2.One or more health, social, or community care providers are involved

3.Co-operation between at least two services (may be part of the same organization)

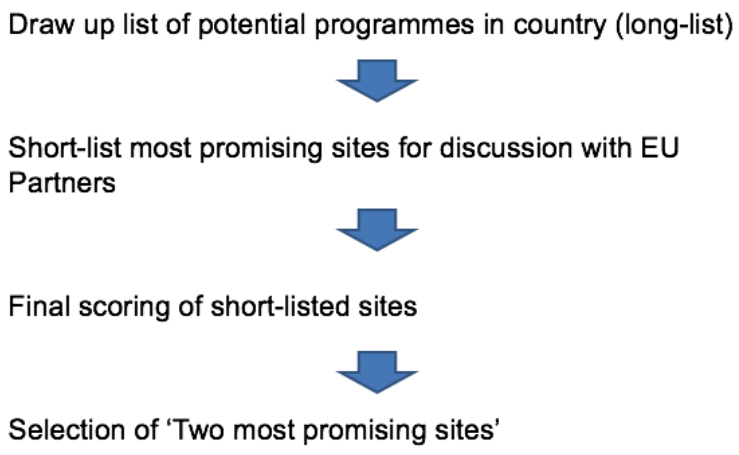
4.Programme has some formal status/ formalized cooperation

5.Programme is evaluable (by us)

6.Currently operational (at least 1 year of data within 2 years)

7.Programme covers at least 100 adult patients

Search strategy



Final Scoring

- Essential criteria
  - Same as inclusion criteria (above)
- Non-essential criteria (scored Yes/neutral/No)
  - Scalable?
  - Transferable?
  - Supports long-term approach?
  - Goal-oriented rather than disease-oriented?
  - Patient has active role?
  - Bottom-up?
  - Informal care givers involved?

The two programmes with the highest score, i.e. fulfilling all essential criteria and as many as possible of the non-essential criteria, were chosen in each country.

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Kapitel 8

Zusammenfassung, Schlussfolgerungen und Handlungsempfehlungen

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Die vorliegende Dissertation untersucht, inwieweit integrierte Versorgung für multimorbide Personen innerhalb Europas ihrer zunehmenden Bedeutung gerecht wird. Wie in Kapitel 1 ausführlich beschrieben, wird die integrierte Versorgung derzeit als einer der vielversprechendsten Ansätze für eine geeignete Versorgung von Menschen mit multiplen chronischen Erkrankungen angesehen. Entsprechend wurden in den letzten Jahren innovative integrierte Versorgungsmodelle entwickelt, welche derzeit auf lokaler oder regionaler Ebene in europäischen Ländern implementiert werden [1]. Da das Interesse stetig wächst, ist es für die Entwicklung und Umsetzung effektiver integrierter Versorgungsprogramme für multimorbide Personen erforderlich, mehr Wissen über einzelne, zusammenhängende und relevante Elemente und Determinanten, die zum Erfolg von integrierten Versorgungsprogrammen beitragen, zu erlangen. Außerdem mangelt es in Bezug auf integrierte Versorgungsprogramme speziell für multimorbide Personen weiterhin an Evidenz darüber, wie diese systematisch beschrieben und analysiert werden können. Ebenso mangelt es an Wissen über geeignete Finanzierungsansätze. Daher hat sich diese Dissertation auf die Untersuchung von drei Bereichen der integrierten Versorgung konzentriert: die Verwendung relevanter Elemente in der Praxis, die systematische Entwicklung und Beschreibung in der Theorie und die angemessene Finanzierung in Theorie und Praxis.

In dieser Arbeit wurden bereits implementierte integrierte Versorgungsprogramme abgebildet, um beispielhafte Ansätze, Elemente und vorhandene Lücken aufzuzeigen und gleichzeitig Empfehlungen für die weitere systematische Beschreibung, Analyse und adäquate Finanzierungsmöglichkeiten zu formulieren. Die Arbeit basiert auf länderübergreifenden Vergleichen und kombiniert systematische Literatur- und Dokumentanalysen mit qualitativen Interviews. Die Untersuchung der unterschiedlichen integrierten Versorgungsprogramme hatte zu keinem Zeitpunkt innerhalb dieser Arbeit das Ziel, eine Rangordnung dieser Programme zu erstellen oder zu bewerten, inwieweit einige als „best practice“ bezeichnet werden können.

Ziel der Arbeit war die Beantwortung folgender Fragen:

1. Wie wird integrierte Versorgung für Multimorbidität in Europa umgesetzt und zu welchen Ergebnissen trägt sie bei? Welche Elemente sind für eine erfolgreiche Implementierung von integrierten Versorgungsprogrammen für multimorbide Personen relevant, förderlich oder hemmend?
2. Wie lassen sich integrierte Versorgungsprogramme für Multimorbide systematisch entwickeln, beschreiben und analysieren?
3. Werden individuell angepasste Finanzierungsmethoden in europäischen Programmen zur integrierten Versorgung verwendet und sind deren Leistungsanreize für die Versorgung multimorbider Personen geeignet?

Zusammenfassung und Diskussion der Ergebnisse

Wie wird integrierte Versorgung für Multimorbidität in Europa umgesetzt und zu welchen Ergebnissen trägt sie bei? Welche Elemente sind für eine erfolgreiche Implementierung von integrierten Versorgungsprogrammen für multimorbide Personen relevant, förderlich oder hemmend?

Da es bisher keine allgemeingültige Definition für integrierte Versorgung gibt und diese infolgedessen in unterschiedlichen Ländern anders definiert und umgesetzt wird, führt das zu konzeptionellen Mehrdeutigkeiten und erweist sich als hinderlich für die Umsetzung und Analyse integrierter Versorgung [2, 3, 4]. Die Ergebnisse der Kapitel 2 und 3 machen dies ebenfalls deutlich, denn die untersuchten integrierten Versorgungsprogramme verwenden unterschiedliche Definitionen von integrierter Versorgung und Multimorbidität. Die Programme sind in vielerlei Hinsicht sehr heterogen. Diese reichen von engeren, sich auf bestimmte Indikationen fokussierende, über indikationsübergreifende bis hin zu populationsbezogenen integrierten Versorgungsprogrammen. Sie unterscheiden sich nicht nur hinsichtlich der gewählten Vergütungsmethode, einbezogener Elemente und Leistungserbringer, dem Setting, Integrationsgrad und -tiefe, sondern auch hinsichtlich der Zielgruppe.

Die Ergebnisse deuten darauf hin, dass die häufigsten Hindernisfaktoren für integrierte Versorgungsprogramme eine fehlende Vernetzung der Sektoren, erschwerende bürokratische Hürden und regulatorische Herausforderungen, begrenzte finanzielle Ressourcen sowie eine fehlende hinreichende Unterstützung seitens des Gesetzgebers sind. Dies stimmt mit anderen, bereits in der Literatur veröffentlichten Ergebnissen überein [5, 6]. Eine stärkere Integration der Versorgung bedarf großer Veränderungen auf vielen Ebenen, denen nicht immer alle Akteure offen gegenüberstehen. Das Beharrungsvermögen einiger Akteure hatte vielfältige Ursachen und reicht von schwer kalkulierbaren Investitionsrisiken, z.B. bei den Krankenkassen; über Kooperationsvorbehalte der Leistungserbringer; z.B. aus einer Angst vor dem möglichen Mehraufwand; bis hin zum Zögern vieler Versicherter, die bekannte und gewohnte Regelversorgung gegen innovative, aus individueller Sicht qualitativ schwer einschätzbare Versorgungsformen einzutauschen. Da integrierte Versorgung zudem ein sehr komplexes und polymorphes Konzept ist, ebenso wie die Zielgruppe Multimorbider an sich, ist es schwierig Evidenz über die Auswirkungen integrierter Versorgung als Ganzes abzuleiten. Stattdessen kann es für politische Entscheidungsträger und beteiligte Akteure hilfreicher sein, auf Evidenz über die Auswirkungen von relevanten Kernelementen und Determinanten zurückzugreifen, die zur Umsetzung integrierter Versorgung beitragen können. Darüber hinaus mangelt es an Wissen über die Zusammenhänge einzelner

Elemente innerhalb integrierter Versorgungsprogramme und deren Effekte [4]. Um dieses Wissen zu erweitern, wurden in den Kapiteln 2 und 3 dieser Arbeit folgende Elemente identifiziert, die, insbesonders in Kombination, zur Umsetzung integrierter Versorgung beitragen konnten: die Schaffung neuer Kooperationspartnerschaften; die Neudefinition von Rollen und Verantwortlichkeiten; die Schaffung neuer beruflicher Rollen; sowie ein unterstützender Führungsstil; der Vernetzung und arbeitsteilige Zusammenarbeit fördert; klar geregelte Verantwortlichkeiten; Koordination der Versorgung; eine gute Kommunikation und ein Paradigmenwechsel hin zu einem personenorientierten Ansatz. Das bulgarische Programm, welches in Kapitel 3 untersucht wurde, zeichnet sich besonders durch die Verwendung von zwei innovativen Elementen aus. So wird ein Multiplikatorenansatz verfolgt, bei welchem Patienten, die von mehreren chronischen Erkrankungen betroffen sind, in Form von Weiterbildungen geschult und ausgebildet werden, um selber wiederum andere multimorbide Patienten im Versorgungsprozess zu begleiten und zu unterstützen. Diese Form neuer beruflicher Rollen und die Einbeziehung von Patienten in das Team multidisziplinärer Leistungserbringer stellt eine innovative Umsetzung eines personenorientierten Ansatzes dar. Interessanterweise konnte festgestellt werden, dass fehlende Maßnahmen seitens des Gesetzgebers die Umsetzung eines integrierten Versorgungsprogramms zwar hemmen können, jedoch nicht zwangsläufig verhindern. Denn das bulgarische Programm konnte Patienten mit komplexen Versorgungsbedürfnissen trotz schwieriger äußerer Umstände, bedingt durch begrenzte finanzielle und personelle Ressourcen, eine innovative integrierte und qualitativ hochwertige Versorgung ermöglichen. Dies war vor allem aufgrund von langjährigen Kooperationen und dem starken Engagement und Beharrungsvermögen seitens der Führungsebene möglich.

Die Ergebnisse der Kapitel 2 & 3 liefern Hinweise darauf, dass in zwei Bereichen noch dringender Handlungsbedarf besteht: der Finanzierung und Evaluation integrierter Versorgung. Neue Prozesse der Finanzierung, Vergütung und Honorierung von medizinischen oder sozialen Leistungen wurden selten genutzt. Die hier erforschten integrierten Versorgungsprogramme blieben überwiegend Teil der regulären Finanzierung des jeweiligen Landes. Nach dem Auslaufen von Anschubfinanzierungen, zeigte sich in einigen Programmen, wie wichtig es ist, für eine Sicherstellung der Finanzierung bereits zu Beginn der Implementierung zu sorgen, da diese ansonsten trotz positiver Evaluationsergebnisse beendet wurden, wenn reguläre Finanzierungsoptionen nicht ausreichend sind.
Große Unterschiede wurden bei der Datenerhebung und der Evaluation der acht integrierten Versorgungsprogramme gefunden. So wurden häufig keine standardisierten oder validierten Erhebungsinstrumente oder Methoden verwendet. Außerdem waren Informationen über das verwendete Studiendesign nicht immer zugänglich. Zur weiteren Evidenzbasierung der Wirksamkeit

integrierter Versorgung für multimorbide Personen wurde bereits in vorhergehenden Untersuchungen auf eine Reihe von Verbesserungsvorschlägen für die bessere Vergleichbarkeit der Evaluationsstudien hingewiesen [7]. Es sollte ein Mindeststandard an Berichterstattung festgelegt werden, der in Evaluationsstudien verbindlich enthalten sein sollte, damit zukünftige Untersuchungen besser in der Lage sind mittels eines standardisierten und systematischen Ansatzes, Unterschiede in den Ergebnissen auf Differenzen zwischen den Versorgungsansätzen zurückzuführen und diese somit besser vergleichbar wären. In anderen Studien wurde auch vorgeschlagen sich nicht mehr nur auf primäre Ergebnisse zu konzentrieren, sondern auf vielfältigere Ziele, welche komplexe Interventionen wie integrierte Versorgungsprogramme in der Regel haben und deswegen eine multikriterielle Form der Bewertung erfordern [8, 9]. Empfehlenswert scheint zudem eine standardisierte Berichterstattung, kontinuierliche Überwachung und längere Follow-Up Zeit, um Unterschiede zwischen dem Versorgungsansatz und der Regelversorgung feststellen zu können [10, 9].

Um den vielfältigen Bedürfnissen von Menschen mit Multimorbidität gerecht zu werden und systemimmanente Hürden zu überwinden und künftige Investitionen in die integrierte Versorgung zu erleichtern, ist ebenfalls eine stärkere Berücksichtigung der Evaluation durch gesetzgeberische Maßnahmen erforderlich. Vorgaben seitens des Gesetzgebers sind wichtig, denn Verbesserungen und Veränderungen innerhalb von Gesundheitssystemen können nicht nur über integrierte Versorgungsprogramme selbst erreicht werden [11, 12]. Zwar bleibt die Frage nach der Übertragbarkeit ganzer integrierter Versorgungsmodelle, dennoch bieten die beiden Kapitel 2 & 3 wichtige Erkenntnisse bezüglich relevanter Elemente und Determinanten, die eine Umsetzung integrierter Versorgungsansätze erleichtern können. Sowohl weitere Forschung, als auch die Entwicklung und Umsetzung integrierter Versorgungsprogramme, sollten sich an den Bedürfnissen multimorbider Personen ausrichten. Eine personenzentrierte integrierte Versorgung, die die jeweiligen Rahmenbedingungen beachtet, wird als äußerst wichtig erachtet, da es keine einheitliche Lösung gibt, denn die „eine“ multimorbide Person existiert nicht [5].

Wie lassen sich integrierte Versorgungsprogramme für Multimorbide systematisch entwickeln, beschreiben und analysieren?

Da es in Bezug auf integrierte Versorgungsprogramme speziell für multimorbide Personen weiterhin an Standards darüber mangelt, wie diese systematisch beschrieben und analysiert werden können, wurde dieser Frage in den Kapiteln 4 & 5 nachgegangen. Es wurde zunächst ermittelt, welche Elemente im Rahmen von theoretischen Modellen und im Rahmen integrierter Versorgungsprogramme in der Literatur im Zusammenhang mit der Versorgung multimorbider Personen als notwendig und relevant beschrieben werden.

Die meisten Elemente, die in der wissenschaftlichen Literatur über integrierte Versorgungsprogramme für multimorbide Personen identifiziert wurden, lassen sich den WHO-Gesundheitssystemkomponenten: Leistungserbringung, Steuerung & Regulierung, Leistungserbringer und Informationsaustausch & Forschung zuordnen. Folgende fünf Elemente: (1) personenzentrierte Pflege, (2) ganzheitliche Bewertung, (3) Selbstmanagement, (4) Integration und Koordination von Diensten und (5) Zusammenarbeit, scheinen von zentraler Bedeutung zu sein, da diese sowohl im Rahmen von theoretischen Modellen, als auch im Rahmen integrierter Versorgungsprogramme zu den am häufigsten in der Literatur genannten Elementen gehören. Ein weiteres Beispiel ist der Einsatz von eHealth, dem ein großes Potenzial zur Verbesserung der integrierten Versorgung multimorbider Menschen zugeschrieben wird, aber dennoch bisher in der wissenschaftlichen Literatur zum Thema Multimorbidität nur begrenzt Beachtung gefunden hat [13, 14].

Diese Ergebnisse decken sich mit den Elementen, die in den acht untersuchten integrierten Versorgungsprogrammen aus Kapitel 2 & 3 identifiziert wurden. Schlussfolgerungen, bzw. eine Bewertung der jeweiligen Bedeutung der einzelnen Elemente, werden jedoch durch eine unzureichende Qualität der Evaluationsstudien erschwert [7, 15].

Elemente, die sich auf die Komponenten umweltbezogene Einflüsse, Finanzierung sowie Technologien & Medizinprodukte beziehen, wurden in der wissenschaftlichen Literatur seltener gefunden. Ebenso wurde nur sehr wenig über politische Maßnahmen zur Unterstützung integrierter Versorgung gefunden. Dies könnte auf die in der Suche verwendeten breiten Suchbegriffe zurückzuführen sein, spiegelt aber auch wider, dass Forschungsdefizite bezüglich bereits untersuchter Elemente innerhalb der integrierten Versorgung bestehen.

Darüber hinaus ist anzumerken, dass viele Elemente, die sich auf die integrierte Versorgung im Allgemeinen oder einzelne Erkrankungen konzentrieren, identifiziert werden konnten, diese jedoch aufgrund der Komplexität der Gruppe multimorbider Personen angepasst werden müssen [16]. Aus den Ergebnissen kann geschlossen werden, dass ein ganzheitliches Modell oder Konzept benötigt wird, welches die Komplexität, die sich aus der Multimorbidität ergibt, besser berücksichtigt.

Außerdem fehlt bisher eine Grundlage für eine systematische und standardisierte Beschreibung, Entwicklung und Evaluation von integrierten Versorgungsprogrammen für multimorbide Personen.

Dazu wurde in Kapitel 5 auf Grundlage der in Kapitel 4 beschriebenen Ergebnisse ein Framework entwickelt, welches relevante Konzepte und Elemente der integrierten Versorgung für Multimorbidität, die in der Literatur und durch internationale Expertendiskussionen mit fünf Interessengruppen, d.h. Patienten, Partnern und informellen Pflegekräften, Fachleuten, Kostenträgern und politischen Entscheidungsträgern, identifiziert wurden, strukturiert. Das umfassende Framework ist in verschiedenen Kontexten anwendbar und soll zur systematischen Beschreibung, Entwicklung und (Re-)Organisation integrierter Versorgungsprogramme beitragen. Solche strukturierten Beschreibungen können den Vergleich von integrierten Versorgungsprogrammen erleichtern, indem sie Variationen auf allen Ebenen explizit machen und Anregungen für die weitere Implementierung und Bewertung von integrierten Versorgungsprogrammen für multimorbide Personen liefern. Das Framework bietet auch die Möglichkeit Konzepte auf der Makroebene (z.B. gesetzliche Maßnahmen) zu beschreiben, denn diese sind hinsichtlich der Übertragbarkeit und Umsetzung integrierter Versorgung von großer Bedeutung.

Aus den Ergebnissen der Kapitel 4 und 5 geht hervor, dass es für die zukünftige Forschung einer klaren konzeptionellen Definition von Multimorbidität und ihrer Abgrenzung von anderen verwandten Konzepten wie Komorbidität, Komplexität, Gebrechlichkeit und Verletzlichkeit bedarf. Denn ohne diese Definitionen und die Berücksichtigung verwandter Konzepte wird ein strukturierter Vergleich, eine Verallgemeinerung oder die Anwendbarkeit des Frameworks und anderer Forschungsergebnisse erschwert. Außerdem wird die Aufnahme von Multimorbidität als MeSH-Begriff empfohlen und ein validierter Suchfilter für Integrierte Versorgung. Nur so kann die bisher bei diesen Themen besonders komplexe und zeitaufwendige Suche vereinfacht werden und integrierte Versorgung ihren potentiellen Beitrag zu einer verbesserten Versorgung leisten [17].

Werden innovative Vergütungsmethoden in europäischen Programmen zur integrierten Versorgung verwendet und sind deren Leistungsanreize für die Versorgung multimorbider Personen geeignet?

Wie bereits in Kapitel 4 beschrieben, führt die wissenschaftliche Literatur an sich nicht zu einer einfachen Schlussfolgerung darüber, welche Finanzierungsquellen genutzt und wie Vergütungs- und Anreizmechanismen neugestaltet werden können. Die Literatur konzentriert sich meist auf die Makroebene des Gesundheitssystems und nicht auf die Frage, welche Finanzierungsquellen für bestimmte integrierte Versorgungsprogramme am geeignetsten und nachhaltigsten sind. Allerdings führt ebenfalls die Analyse von 101 integrierten Versorgungsprogrammen, im Rahmen des ICARE4EU Projektes, nicht zu einem standardisierten Vergütungsansatz, der in unterschiedlichen integrierten Versorgungsprogrammen verwendet werden könnte. Die Ergebnisse des ICARE4EU-Projekts zeigen, dass nur 27 der 101 ausgewählten Programme über innovative Vergütungsansätze verfügen, die also speziell für diese Programme entwickelt wurden. Es wurde in diesem Zusammenhang kein Vergütungsansatz ermittelt, der alle Anforderungen und Besonderheiten der Zielgruppe, der beteiligten Leistungserbringer oder des Gesundheitssystems, berücksichtigt. Ein vielversprechender Ansatz jedoch ist die gemeinsame Gewinnausschüttung, das heißt, dass die Projektpartner aus dem erzielten Erfolg vergütet werden und sich das Projekt auf Dauer selbst tragen kann. Dieser Ansatz fördert das Engagement und die Integration der Leistungserbringer. Werden integrierte Versorgungsprogramme für multimorbide Personen also effektiv umgesetzt, deuten die Ergebnisse aus dem ICARE4EU-Projekt und der Literatur darauf hin, dass sie Geld sparen und Kosten kontrollieren können. Evaluationen mehrerer Programme, einige extern evaluiert, andere nur intern evaluiert, zeigen insbesondere, dass der Einsatz innovativer Technologien, eine verstärkte multiprofessionelle und arbeitsteilige Zusammenarbeit und das Polypharmaziemanagement zu Einsparungen führen können. Allerdings ist weitere Evidenz erforderlich, um diese Ergebnisse zu verifizieren.

Ebenso deuten die in Kapitel 7 dargestellten Ergebnisse aus der aktuellen Literatur und aus denen, im Rahmen des SELFIE Projektes identifizierten integrierten Versorgungsprogrammen daraufhin, dass es trotz der Diskurse über die Bedeutung neuer Vergütungsmechanismen für die Umsetzung der integrierten Versorgung bisher vergleichsweise wenig konkrete Maßnahmen gibt [18]. Die wenigen implementierten innovativen Vergütungsansätze scheinen überwiegend krankheits- und sektorspezifisch zu sein, verglichen mit den in der Literatur beschriebenen ambitionierten populationsbezogenen Ansätzen. Daher ist ihre Eignung, Anreize für eine qualitativ hochwertige Versorgung für diejenigen zu schaffen, die eine integrierte Versorgung am dringendsten benötigen, z.B. multimorbide Personen, fraglich [19].

Daraus kann geschlossen werden, dass insbesondere innovative Vergütungsansätze entwickelt werden müssen, die auf die spezifischen Bedürfnisse Multimorbider und Ziele eines Programms sowie den lokalen Kontext und das nationale Gesundheitssystem, in dem sie umgesetzt werden, zugeschnitten sind. Kapitel 6 zeigt, dass es Hinweise darauf gibt, dass einige Elemente für die Vergütung im Rahmen der integrierten Versorgung multimorbider Personen besonders hilfreich zu sein scheinen. Die Vergütungsansätze für eine integrierte Versorgung von multimorbiden Personen sollten Risiken ausreichend morbiditätsadjustiert an die Leistungserbringer weitergeben. Innovative Vergütungsansätze, die potenziell zur Förderung von integrierter Versorgung genutzt werden könnten, umfassen (1) koordinations- bzw. kooperationsorientierte Vergütung (2), Gewinnausschüttung und (3) Komplexpauschalen - in Kombination mit verschiedenen Vergütungsansätzen, die in einem bestimmten Land funktionieren (z.B. Budgets, Kopfpauschale, Fallpauschalen und Einzelleistungsvergütung). Darüber hinaus können Einzelleistungsvergütungen genutzt werden, um Anreize für eine bessere Versorgungsqualität zu schaffen, gemessen an der Struktur-, Prozess- oder Ergebnisqualität. Jedoch müssen bei der Einzelleistungsvergütung wiederum Maßnahmen ergriffen werden, um einer möglichen, unerwünschten Leistungsausweitung entgegen zu wirken. Bei einer Kombination dieser Ansätze wird angenommen, dass so positive Anreizeffekte verstärkt und negative Anreizverzerrungen eingeschränkt werden. So kann beispielsweise ein bestehender Vergütungsansatz (z.B. Kopfpauschale oder Einzelleistungsvergütung) mit einer zusätzlich vergüteten Einzelleistung kombiniert werden, die an die Bedürfnisse von Menschen mit Multimorbidität angepasst ist (z.B. Überprüfung ihres Medikamentenplans oder ganzheitliche Bedarfsanalyse). Die Einführung von sog. „bundled payments“ oder Gewinnausschüttung ist dagegen wesentlich aufwendiger und erfordert integrierte Versorgungsstrukturen, aufwändige Methoden der Casemix-Anpassung und gut funktionierende Benchmarkingsysteme, die die Qualität der Versorgung gut abbilden und überwachen. Es kann außerdem geschlussfolgert werden, dass Indikatoren zur Messung der Qualität in das Vergütungssystem integriert werden sollten.

Die Ergebnisse aus Kapitel 6 und 7 machen deutlich, dass der Gesetzgeber sich jedoch darüber im Klaren sein sollte, dass mehrere Voraussetzungen erfüllt sein müssen, um komplexere Vergütungsansätze zu entwickeln, die Multimorbidität besser berücksichtigen. Dazu gehören effektive Informationssysteme, die aussagekräftige Daten über Qualität und Kosten erheben (z.B. um Zahlungsanpassungen für die Qualität der Versorgung zu ermöglichen), große Managementorganisationen, die finanzielle Risiken übernehmen können (z.B. im Rahmen der Kombination verschiedener Vergütungsansätze) und starke Management- und Steuerungsstrukturen auf nationaler und auch auf Programmebene. Es bedeutet auch, dass Länder, in denen solche Voraussetzungen fehlen, besser beraten sein könnten, sich auf die Weiterentwicklung ihrer

derzeitigen Vergütungsansätze und der oben genannten Voraussetzungen zu konzentrieren, bevor sie beispielsweise sog. „bundled payments“ oder Gewinnausschüttung, geschweige denn populationsorientierte Vergütungsmodelle einführen.

Trotz der zunehmenden Zahl von Menschen mit Multimorbidität gibt es überraschend wenige Studien darüber, die untersuchen, wie verschiedene Vergütungsansätze die Versorgung mit chronischen Krankheiten verbessern können und Reviews bestätigen einen Mangel an Evidenz über die ökonomische Vorteilhaftigkeit von integrierten Versorgungsprogrammen für Menschen mit Multimorbidität. Weitere Forschung bezüglich der Auswirkungen unterschiedlicher Anreize auf das Verhalten von Leistungserbringern gegenüber multimorbiden Menschen ist daher dringend erforderlich. Gut evaluierte Vergütungsansätze sind wichtig, denn erst eine standardisierte Berichterstattung macht eine Überprüfung des Implementierungspotenzials möglich und kann somit zu einer optimierten Versorgung der zunehmenden Zahl multimorbider Personen führen [20].

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