SELFIE: Sustainable inteGrated chronic care modeLs for multi-morbidity: delivery, financing, and performance
SELFIE partners

1. Erasmus School of Health Policy & Management, Erasmus University Rotterdam, **the Netherlands** *(coordinator)*
2. Institute for Advanced Studies, **Austria**
3. Ministry of Health (&Agency for Quality & Accreditation in Health Care and Social Welfare), **Croatia**
4. Dept of Health Care Management, Berlin University of Technology, **Germany**
5. Syreon Research Institute, **Hungary**
6. Dept of Economics, University of Bergen, **Norway**
7. IDIBAPS & Hospital Clinic Barcelona, **Spain**
8. Centre of Health Economics, University of Manchester, **UK**
This project (SELFIE) has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 634288. The content of this conference reflects only the SELFIE groups’ views and the European Commission is not liable for any use that may be made of the information contained herein.
Navigating through the jungle of integrated care

Ewout van Ginneken & Miriam Reiss

SELFIE Final conference, 13th of June
A framework as navigation tool through the jungle of integrated care

Selection of 17 promising integrated care initiatives

Factors contributing to success of integrated care initiatives
Rationale for development of SELFIE framework

Current integrated care programmes arguably fail to capture the complexities resulting from multi-morbidity.

New models need to better capture multi-morbidity-specific elements.

More attention to the macro-level policies could improve effectiveness of newly designed integrated care programmes.

Approach: a scoping review of scientific and grey literature and expert discussions to identify and structure relevant concepts, elements and models.
The SELFIE framework for integrated care for multimorbidity

Can aid development, implementation, description, and evaluation of integrated care for multimorbidity.

Can be used by developers (clinicians, managers), policy makers, health insurers, and researchers.
The core

- Holistic understanding of the person
- Self management capabilities
- The environment needs to be taken into account
Service delivery

**Meso**: Integration across health and social care sectors, ranging from fully integrated formal alliances or mergers to informal cooperation agreements.
Leadership & governance

Meso: supportive and trusted leadership throughout all levels and systems that is fully committed to clearly-defined goals, and acknowledges professional autonomy, shared vision
Workforce

**Micro**: multidisciplinary team that crosses the healthcare, social care, and volunteer work boundaries, one contact person, not too many different carers, care coordinator.
Financing

• **Meso**: new payment methods that support coordination and integration, ranging from P4C, bundled payments, and shared savings.
Technologies and medical products

**Meso**: a shared information system (e.g., EMRs including care plans) that is accessible for multiple professionals across health and social sectors.
Information & research

• Macro: ensure privacy and data protection legislation with regard to information sharing and information on **navigating the care and social system**
Monitoring

- **Micro**: monitoring of changes, preferences, care plans and self-management capability

- **Meso**: continuous monitoring using a quality improvement system plays a key role in performance management and pay-for-performance

- **Macro**: monitoring the workforce-demography match and the prevalence and incidence of multimorbidity
THE SELFIE FRAMEWORK
FOR INTEGRATED CARE FOR MULTI-MORBIDITY

By: Fenna RM Leijten, Verena Struckmann, Ewout van Ginneken, Thomas Czyzynka, Markus Kraus, Miriam Reiss, Apostolos Tsachristas, Melinde Boland, Antoinette de Bont, Roland Bal, Reinhard Busse, and Maureen Rutten-van Mótk \n
Summary: There is an increasing prevalence of multi-morbidity, which is associated with lower quality of life and higher expenditures, and constitutes a challenge to current, often fragmented, care.
Selection of 17 integrated care programmes

- **Population Health Management**
- **Frail Elderly**
- **Persons with Problems in Multiple Life Domains**
- **Palliative & Oncology Patients**

<table>
<thead>
<tr>
<th>Country</th>
<th>Programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Health Network Tennengau (Gesundheitsnetzwerk Tennengau)</td>
</tr>
<tr>
<td>AT</td>
<td>Sociomedical Centre Liebenau (Sozialmedizinisches Zentrum Liebenau)</td>
</tr>
<tr>
<td>HR</td>
<td>GeroS System</td>
</tr>
<tr>
<td>HR</td>
<td>Palliative Care System</td>
</tr>
<tr>
<td>DE</td>
<td>Casaplan</td>
</tr>
<tr>
<td>DE</td>
<td>Gesundes Kinzigtal</td>
</tr>
<tr>
<td>HU</td>
<td>Onconetwork</td>
</tr>
<tr>
<td>HU</td>
<td>Palliative Care Consulting Service (Mobile) Team</td>
</tr>
<tr>
<td>NO</td>
<td>Learning network</td>
</tr>
<tr>
<td>NO</td>
<td>Medically Assisted Rehabilitation (MAR) Bergen</td>
</tr>
<tr>
<td>ES</td>
<td>Badalona Serveis Assistencials (BSA)</td>
</tr>
<tr>
<td>ES</td>
<td>Barcelona Esquere (AISBE)</td>
</tr>
<tr>
<td>NL</td>
<td>Better together in Amsterdam North (BSIN)</td>
</tr>
<tr>
<td>NL</td>
<td>Proactive Primary Care Approach for Frail Elderly (U-PROFIT)</td>
</tr>
<tr>
<td>NL</td>
<td>Care Chain Frail Elderly</td>
</tr>
<tr>
<td>UK</td>
<td>South Somerset Symphony Programme</td>
</tr>
<tr>
<td>UK</td>
<td>Salford – Salford Integrated Care Programme (SiCP)/ Salford Together</td>
</tr>
</tbody>
</table>

**SELFIE 2020**
Comprehensive description of programmes

• Next step after development of framework and selection of programmes: comprehensive description of the 17 programmes, guided by framework

• Methodological approach: thick description – qualitative approach aiming to investigate patterns of cultural and social relationships beneath the surface of the studied case (“soft facts”)

• Information gathered by means of two complementing approaches:
  1. Document analysis of programme documents
  2. Qualitative interviews with 10-20 relevant stakeholders per programme: managers, initiators, payers, professionals, informal caregivers, patients, other

• Individual reports on the 17 programmes prepared by SELFIE partners – available on SELFIE website (https://www.selfie2020.eu/)
Overarching analysis

- Overarching analysis of thick description reports with focus on the **core and micro level** of the framework, mainly in the area **service delivery** (second overarching analysis on digital health tools)

- Identification of **factors contributing to success of integrated care initiatives for persons with complex needs**

- **Central aspects that emerged:**
  - Holistic view of the patient
  - Continuity of care
  - Communication between professionals
  - Patient involvement
  - Self-management
Holistic view of the patient

- Increasing consensus that integrated care of persons with complex needs cannot exclusively address physical health problems
- Recognition of interconnectedness of physical health, mental health and social situation
- Taking into account patients’ environment when assessing their needs
- Some programmes specifically target vulnerable populations

Consideration of social situation in Sociomedical Centre Liebenau (AT):

“[…] if someone doesn’t know how they are going to finance their everyday needs, then coping, for instance, with their diabetes or their multiple illnesses is probably the least of their worries” [physician]
Continuity of care

- Good collaboration, smooth transitions between caregivers – central aspect of **quality of care**

- Especially important for persons with complex needs who have to navigate **multiple providers** in **multiple sectors**

- Professionals acting as **single contact point** for patients

- **Alignment of services** offered: multiple services in one place (“one-stop-shop”)

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**Care coordinator** as **single contact point** in South Somerset Symphony (UK)

“It doesn’t matter what is wrong with me, I can discuss it with them. If I need a doctor’s appointment, they can make one at the surgery for me and they can... [...] So it is, as they have said, one body of people I can go to that has access to everything I need.” [patient]
Communication between professionals

- Integrated care for persons with complex needs often involves multi-disciplinary teams
- Communication of particular importance when various disciplines are involved and cases are complex
- Regular team meetings or case conferences as communication instruments
- Implementing good communication takes effort, time and team culture that allows for open-minded discussion

Low thresholds in communication perceived as important, e.g. in Health Network Tennengau (AT):

“I think a certain culture has since developed over the years in the Tennengau region. Nowadays, there are no borders between the different participants. If I contact someone, that contact is basically friendly and positive from the start, even if I were perhaps on occasion to voice criticism. [...] We support and encourage each other and that’s what I find good and is what, I think, has established itself over the course of time.” [care manager/initiator]
Patient involvement

• **Involvement** of patients in all stages of the care process – in contrast to patient as a passive receiver of treatment

• Patients with complex needs often need to prioritise among possibly conflicting goals – joint goal-setting

• **Shared decision-making** as an opportunity for patients to feel they are being heard

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Aim of preventing admission to institutional care in U-PROFIT (NL):

“[Living at home longer is] what everyone essentially wants. That’s what the government really wants, but most older people too. And that only works if you link up with what someone finds important.” [project manager]
Self-management

• Self-management as an **essential element** in the care of persons with complex needs (e.g. behavioural/lifestyle changes, coping strategies, health literacy, navigation through the care system, medication adherence, communication skills etc.)

• Many integrated care programmes provide **support** (education, monitoring, continuous training) **to promote patients’ self-management abilities**

• Self-management needs to be **tailored to patients’ motivation and abilities**

Self-management as a means to **empower patients**, e.g. in Gesundes Kinzigtal (DE):

“We do not want to be the clucking hen, who asks every week did you do this, did you do that. Like this, the patient is never going to do something independently. So the idea and our philosophy is in the end to support self-empowerment, so that the physician is not the coach for a patient’s entire life, but simply the companion, a ‘supervisor’ for a certain time.” [health professional]
Implementation, upscaling and transferability: lessons learned

Willemijn Looman & János Pitter

SELFIE Final conference, 13th of June
Integrated care for multi-morbidity

WHAT - framework
Integrated care for multi-morbidity

WHAT - framework

HOW - framework
10 implementation mechanisms

Based on:
- Thick descriptions 17 SELFIE integrated care programmes
- Literature
1) Engage in alignment work

Alignment of components
- example: individualized care plan

Alignment of micro/meso/macro-level
- example: working around macro-level barriers (rather than overcoming)
2) Adopt an incremental growth model

One can *incrementally* integrate all of the services for some of the people, and some of the services for all of the people, but cannot integrate all of the services for all of the people *at once* (adaptation of **Leutz**, 1999).
3) Balance between flexibility and formal structures

Balance between:
- Person-centredness & standardization
- Informal relations & formal structures
4) Apply collaborative governance

Health Network Tennengau – Austria
- involvement of all major players in health and social care
- shared motivation and interests
- frequent communication
- building trust

Ansell & Gash, 2007
5) Distribute leadership

Leadership was distributed across different levels: national, regional, organisational and unit level.

Examples:
- Elected management board of programme
- Local champions within teams
6) Build a multidisciplinary team culture with mutual recognition of each other’s roles

Salford Together – United Kingdom
Multidisciplinary Health and Social care Groups
  • Multidisciplinary team meeting
  • Team meetings to improve collaboration
  • Physical proximity
7) Develop new roles and competencies for integrated care

New roles, task-shifting & task differentiation

Education & training for new competencies:
- To engage in multidisciplinary team work
- To adapt to changing role of the patient e.g. self-management support
8) Secure long-term funding and adopt innovative payment that overcome fragmentation

• Start-up funding

• Long-term contracts
  • Collaborative governance involving payers

• Payment models incentivizing integration
9) Implement ICT to support collaboration and communication rather than administrative procedures

**Examples:**

- BSA & Ais-Be
- Catalonia

Electronic Health Record

Catalan Shared Medical Record
10) Create feedback loops & continuous monitoring

- Feedback
  - Requires culture of openness and willingness
  - In structures, e.g. patient ombudsman
- Involvement research institutes
  - Quality improvement
  - Robust evidence on outcomes

May 2013 - reflexive monitoring
10 implementation mechanisms for integrated care for multi-morbidity

- Engage in alignment work
- Adopt an incremental growth model
- Implement ICT to support collaboration and communication rather than administrative procedures
- Balance between flexibility and formal structures
- Distribute leadership
- Apply collaborative governance
- Build a multidisciplinary team culture with mutual recognition of each other’s roles
- Develop new roles and competencies for integrated care
- Secure long-term funding and adopt innovative payments that overcome fragmentation
- Create feedback loops & continuous monitoring

Applicable in different local, regional and national contexts
Why to seek knowledge transfer to Central and Eastern Europe?

+ even more **limited healthcare and research resources** in CEE;
+ **price level of new technologies** is similar to large Western EU markets;
+ **brain drain** of health care professionals (and researchers) from East to West;
+ less tradition for transparent and justified policy decisions

**CEE countries are in higher need of evidence-based health policy decisions;**

**Western health policies and care solutions may be not implementable in CEE countries.**
A recent H2020 project investigated 101 integrated care programs for multimorbid patients in the EU:

- 84% of the investigated models were from the EU-15
- No models could be included from Poland, Czech Republic, Slovakia, Hungary, Romania
- No consortium partner from the CEE region

### FP7/H2020 health research grants, 2007 – 2016

<table>
<thead>
<tr>
<th></th>
<th>EU-15</th>
<th>CEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>79.4%</td>
<td>20.6%</td>
</tr>
<tr>
<td>Number of participations</td>
<td>92.9%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Consortium coordination</td>
<td>97.9%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Total grant amount</td>
<td>96.9%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Average grant amount per beneficiary</td>
<td>475,048 EUR</td>
<td>217,031 EUR</td>
</tr>
<tr>
<td>Average participation per beneficiary, 2007-2016</td>
<td>3.6</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Evidence based approach to transfer integrated care programs from other countries

**Main dimensions of the transferability**

1. Transferability of integrated care programs
2. Transferability of performance assessment for integrated care models
   * Transferability of program’s performance
   * Transferability of relative importance of the evaluation criteria
   * Transferability of decision criteria
3. Transferability of integrated care payment methods
The SELFIE solution:
A carefully designed transferability approach

1. Reasonable economic diversity of countries in the consortium (i.e. Croatia & Hungary from CEE region; South & North & West EU)

2. 4 of 17 investigated models from CEE countries

3. Transferability work package
   - Multi-stakeholder survey to identify key barriers of integrated care in CEE
   - CEE workshops on potential solutions for key barriers, in specific case studies
   - Transferability guidance development, with contribution from 10+ CEE countries

4. Consideration of transferability aspects upfront in all relevant Work Packages
CEE stakeholder survey: perceived key barriers of integrated care

- Separate health and social care systems & budgets; poor cooperation across sectors
- Insufficient macro-level political support
- Unpredictable financial sustainability; no financial incentives for the new roles; patient co-payment is unacceptable
- Limited access of researchers and evaluators to patient-level data
- Insufficient human resources; Poor acceptance of new professional roles (especially for non-physicians)
- Low acceptance of patient E-health tools in the care process
CEE stakeholder workshops: how to overcome key barriers? (examples)

Start with an existing financing pillar & grow incrementally; Part-time jobs paid from different sectors; attract extra resources e.g. from research grants, pharma, coffee shop at reception desk, etc.

Select a location where human resources are concentrated; empower family and patient peers; power distance and non-acceptance of new roles is less critical in rare diseases: an emerging best practice?
Transferability guidance, step 1: Could this model be started in my country?

Identify the reported barriers of implementation from the literature.

Survey local stakeholders about relative importance of barriers, and focus on the critical ones.

Organize a local multi-stakeholder workshop
- to discuss potential solutions for the critical barriers,
- to conclude on the feasibility of local implementation.

Publish your conclusions and rationale for knowledge sharing with other CEE countries / programs.
Transferability guidance, step 2: Would this model perform well in my country?

Do not transfer models without sound and positive performance assessment in the original country.

Select models with benefits in the locally most important outcomes (e.g. hard clinical outcomes and costs).

Judge the transferability of key outcome parameters. Cost outcomes can be especially different across countries.
Transferability guidance, step 2 (continued):
Would this model perform well in my country?

Apply the local routine method for outcome aggregation. Apply weights approved by local policymakers if MCDA is approached.

Determine the local decision rule, before knowing the aggregated results.

Monitor your local model, and consider adjustment or even termination if local performance is below expectation.
Transferability guidance, step 3: How to set the payment scheme for this model in my country?

If the financing methods are not transferable, a local financing scheme should be developed.

The new, local financing scheme should ensure adequate
- fund raising,
- allocation of resources, and
- financial incentives for care providers.

Plan resources not only for model set-up and initiation, but also for long-term operation, if justified by positive performance monitoring findings.
Discussion with the panel and the audience

SELFIE Final conference, 13th of June
Patient representative
Martin Rathfelder
Manchester Health & Care Commissioning, United Kingdom

Payer
Karlie van Kuijk
VGZ Health Insurance, The Netherlands

Provider/Entrepreneur
Helmut Hildebrandt
Optimedis AG, Germany

Informal caregiver
Vlasta Zmazek
Debra Croatia, Croatia

Scientific researcher
Apostolos Tsiachristas
International Foundation of Integrated Care and University of Oxford, United Kingdom

Patient representative
Martin Rathfelder
Manchester Health & Care Commissioning, United Kingdom
Bundling payments for integrated care: too much to expect?

Matt Sutton and Milad Karimi

SELFIE Final conference, 13th of June
Payment mechanisms and integration

- Integrated care means multiple providers contribute to shared outcome
- Typical, separate, payment mechanisms do not encourage individual providers to take account of this interdependency
  - for example, English hospitals paid for activity and general practices paid for population
  - incentives are not aligned to reduce admissions
- One proposed solution: Integrated organisations, population budget
  - consider costs in whole system and want to generate savings
  - but challenge is to ensure quality and outcomes
Mapping payment mechanisms in SELFIE

<table>
<thead>
<tr>
<th>Unit of Payment</th>
<th>Common Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Per time period</td>
<td>Budget and salary</td>
</tr>
<tr>
<td>2. Per beneficiary</td>
<td>Capitation</td>
</tr>
<tr>
<td>3. Per recipient</td>
<td>Contact capitation</td>
</tr>
<tr>
<td>4. Per episode</td>
<td>Case rates, payment per stay, and bundled payments</td>
</tr>
<tr>
<td>5. Per day</td>
<td>Per diem and per visit</td>
</tr>
<tr>
<td>6. Per service</td>
<td>Fee-for-service</td>
</tr>
<tr>
<td>7. Per dollar of cost</td>
<td>Cost reimbursement</td>
</tr>
<tr>
<td>8. Per dollar of charges</td>
<td>Percentage of charges</td>
</tr>
</tbody>
</table>

**Payer(s)**

- **NHS England**
- **Yeovil Hospital Symphony Programme (including Vanguard, CCG, and other new model funding)**
- **Symphony Healthcare Services Ltd. (integrated primary care practices)**
- **Complex Care Hub**

**Mechanism**

- Primary care practices (Independent practices)
- Yeovil Hospital Symphony Programme (including Vanguard, CCG, and other new model funding)
- Symphony Healthcare Services Ltd. (integrated primary care practices)
- Complex Care Hub

**Provider(s)**

- Primary care practices (Independent practices)
- Yeovil Hospital Symphony Programme (including Vanguard, CCG, and other new model funding)
- Symphony Healthcare Services Ltd. (integrated primary care practices)
- Complex Care Hub

**Details of payment mechanisms (classified according to Quinn 2015)**

1. Per beneficiary (w%) – weighted capitation system paid yearly
2. Per service (x%) – FFS (QOF) payments for completion of process/outcome targets for specific chronic diseases. Paid yearly (in retrospect) up to maximum of Ex
3. Per service (y%) – Enhanced services incentivise national and local priorities
4. Per dollar of cost (z%) – additional funding through integrated care scheme to reimburse period of physician’s time spent on Symphony-specific work

**Bold** = new as part of integrated care programme

**Italics** = existing regular services
Payment mechanisms in the SELFIE programmes

- Only 6 of the 17 SELFIE programmes changed provider payments

<table>
<thead>
<tr>
<th>Country</th>
<th>Programme</th>
<th>New payment mechanisms?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>Casaplus</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Gesundes Kinzigtal</td>
<td>Yes</td>
</tr>
<tr>
<td>Netherlands</td>
<td>U-PROFIT</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Care Chain Frail Elderly</td>
<td>Yes</td>
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<tr>
<td></td>
<td>Better Together</td>
<td>Yes</td>
</tr>
<tr>
<td>UK</td>
<td>Salford</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>South Somerset</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Our classification of payment methods based on SELFIE programmes and literature

- Challenges to implementing new payments in practice
- Risks associated with the introduction of new payments
- No recommendation on ‘best’ payment mechanism

- Population
- Time
- Sectors
- Providers
- Pooling
- Income
- Diseases
- Quality
Using payment mechanisms instead of organisational change

- Organisational integration may not be efficient
  - Internal coordination problems

- Potential loss of benefits from specialisation
  - Primary, secondary and social care require different types of input and different types of capital

- *Can payment mechanisms for separate organisations produce the outcomes desired from an integrated care organisation?*
How to get GPs to help reduce use of hospitals?

• Some historical experiments in England
  • GP budget-holding (*fundholding*)
  • Payment for performance in managing long-term conditions
  • Payment for engaging in activities that reduce admissions
  • Group budget-holding
  • Vertically integrated organisations
## Estimated impacts (from literature and SELFIE)

<table>
<thead>
<tr>
<th>Intervention</th>
<th>“Outcome”</th>
<th>Estimated effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget-holding</td>
<td>Planned admissions</td>
<td>-3.5% to -4.9% (after 2 years)</td>
</tr>
<tr>
<td>Payment for care quality</td>
<td>ACSC emergency admissions</td>
<td>-8.0% to -10.9% (after 4 years)</td>
</tr>
<tr>
<td>Payment for prevention activities</td>
<td>ACSC emergency admissions</td>
<td>-8.0% (after 2 years)</td>
</tr>
<tr>
<td>Integrated organisation</td>
<td>Emergency admissions</td>
<td>-3.1% (after 3 years)</td>
</tr>
</tbody>
</table>

- Effects are substantial but small
- Magnitudes are in similar ball-park
- Payment reforms may be quicker and simpler to implement
Country work on estimating impacts

• Three countries

  • Norway – Co-payments and penalties for municipalities
  • England – Pooled health and social care funding
  • The Netherlands – Bundled payments for chronic diseases
Pooled budgets in England

- Better Care Fund
- Mandated pooling of proportion of health and social care funds
- Meant to stimulate joint working

We found:

- No changes in seven different hospital outcome measures
- Small increases in hospital bed days for patients with multimorbidity
Lessons learned

• A lot more theory than action
  • where there is action, this was helped by macro direction

• Any benefits take time to emerge

• Payment mechanisms may be an alternative to re-organisation

• No clear ‘best practice’
  • results are not as good as predictions
  • trade-offs, not panacea
Discussion with the panel and the audience

SELFIE Final conference, 13th of June
Policy maker
Loukianos Gatzoulis
European Commission, DG Health and Food safety, Belgium

Payer
Karlie van Kuijk
VGZ Health Insurance, The Netherlands

Primary care physician, scientist (em.)
Jan de Maeseneer
Department of Family Medicine and Primary Health Care, University of Gent, Belgium

Scientific researcher
Apostolos Tsiachristas
International Foundation of Integrated Care and University of Oxford, United Kingdom

Policy maker
Juan Carlos Contel
Department of Health, Generalitat de Catalunya, Spain
Value-based integrated care: what do patients and other stakeholders really value

Maureen Rutten-van Mölken and Runa Langaas

SELFIE Final conference, 13th of June

https://www.selfie2020.eu/
<table>
<thead>
<tr>
<th>Area</th>
<th>Care programme A</th>
<th>Care programme B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning</td>
<td>Moderately limited in physical functioning and activities of daily living</td>
<td>Hardly or not at all limited in physical functioning and activities of daily living</td>
</tr>
<tr>
<td>Psychological wellbeing</td>
<td>Seldom or never stressed, worried, listless, anxious, and down</td>
<td>Regularly stressed, worried, listless, anxious, and down</td>
</tr>
<tr>
<td>Social relationships and participation</td>
<td>Some meaningful connections with others</td>
<td>Some meaningful connections with others</td>
</tr>
<tr>
<td>Enjoyment of life</td>
<td>Some pleasure and happiness in life</td>
<td>Some pleasure and happiness in life</td>
</tr>
<tr>
<td>Resilience</td>
<td>Fair ability to recover, adjust, and restore balance</td>
<td>Fair ability to recover, adjust, and restore balance</td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>Highly person-centred</td>
<td>Somewhat person-centred</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>Good collaboration, transitions, and timeliness</td>
<td>Good collaboration, transitions, and timeliness</td>
</tr>
<tr>
<td>Total health- and social care costs</td>
<td>7000 Euro per participant per year</td>
<td>5500 Euro per participant per year</td>
</tr>
</tbody>
</table>

Which care programme do you prefer, A or B?  

A  

B
Discrete Choice Experiment to elicit weights for the outcomes

<table>
<thead>
<tr>
<th>Care programme A</th>
<th>Care programme B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical functioning</strong></td>
<td></td>
</tr>
<tr>
<td>Severe</td>
<td>Limited in physical functioning and activities of daily living</td>
</tr>
<tr>
<td></td>
<td>Regularly</td>
</tr>
<tr>
<td>Stressed, worried, listless, anxious, and down</td>
<td>Always or mostly stressed, worried, listless, anxious, and down</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Social relationships and participation</td>
<td></td>
</tr>
<tr>
<td>No or barely any meaningful connections with others</td>
<td>No or barely any meaningful connections with others</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoyment of life</td>
<td></td>
</tr>
<tr>
<td>Some pleasure and happiness in life</td>
<td>Some pleasure and happiness in life</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Resilience</td>
<td></td>
</tr>
<tr>
<td>Poor ability to recover, adjust, and restore balance</td>
<td>Poor ability to recover, adjust, and restore balance</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Person-centeredness</td>
<td></td>
</tr>
<tr>
<td>Highly person-centred</td>
<td>Highly person-centred</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuity of care</td>
<td></td>
</tr>
<tr>
<td>Poor collaboration, transition, and timeliness</td>
<td>Poor collaboration, transition, and timeliness</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Total health and social care costs</td>
<td></td>
</tr>
<tr>
<td>7000 pounds per participant per year</td>
<td>8400 pounds per participant per year</td>
</tr>
<tr>
<td>Which care programme do you prefer, A or B?</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Why these outcomes?</td>
<td>Physical functioning</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>Absence of stress, worrying, listlessness, anxiety, and feeling down</td>
</tr>
<tr>
<td>Social relationships &amp; participation</td>
<td>Having meaningful connections with others as desired</td>
</tr>
<tr>
<td>Enjoyment of life</td>
<td>Having pleasure and happiness in life</td>
</tr>
<tr>
<td>Resilience</td>
<td>The ability to recover from or adjust to difficulties and to restore one's equilibrium</td>
</tr>
<tr>
<td>Experience</td>
<td>Person-centeredness</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>Good collaboration, smooth transitions between caregivers, and no waste of time</td>
</tr>
<tr>
<td>Costs</td>
<td>Costs</td>
</tr>
</tbody>
</table>
How was the core set of outcomes selected?

Selection based on:

- Focus groups in patients with multi-morbidity in 8 countries  
  *(Leijten et al, BMJ Open 2018; 8:e021072)*
- National workshops with representatives from the 5 P’s in 8 countries
- Outcomes being measured in the selected programmes
- Literature review

Resulting long-list of outcomes was shortened by applying several criteria

- Preference independence
Aim of weight-elicitation study

- what outcomes of integrated care do persons with multi-morbidity value?
- whether different stakeholders think differently about the importance of outcomes

Stakeholders 5P’s
- Patients with multi-morbidity
- Partners and other informal caregivers
- Professionals
- Payers
- Policy makers
SELFIE countries

- AU
- HR
- DE
- HU
- NL
- NO
- ES
- UK

Stakeholders

- Patients: N=1314
- Partners: N=1427
- Professionals: N=1210
- Payers: N=547
- Policy maker: N=601

N~5099
Relative DCE weights for patients in the Netherlands

Netherlands - Patients

- Physical functioning: 0.16
- Psychological well-being: 0.17
- Social relations & participation: 0.09
- Enjoyment of life: 0.23
- Resilience: 0.15
- Person-centeredness
- Continuity of care
- Total costs

Health & well-being
Relative DCE weights for patients in the Netherlands

Netherlands - Patients

- Health & well-being
  - Physical functioning: 0.16
  - Psychological well-being: 0.17
  - Enjoyment of life: 0.23

- Experience
  - Resilience: 0.15
  - Person-centeredness: 0.08
  - Continuity of care: 0.10
  - Total costs: 0.00
Relative DCE weights for patients in the Netherlands

Netherlands - Patients

<table>
<thead>
<tr>
<th></th>
<th>Health &amp; well-being</th>
<th>Experience</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning</td>
<td>0.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>0.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social relations &amp; participation</td>
<td>0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoyment of life</td>
<td>0.23</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>Resilience</td>
<td>0.15</td>
<td>0.08</td>
<td>0.04</td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>0.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuity of care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total costs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comparing relative DCE weights between stakeholders in Germany

Health & well-being
- Physical functioning
- Psychological well-being
- Social relations & participation
- Enjoyment of life
- Resilience

Experience
- Person-centeredness
- Continuity of care

Costs
- Total costs

Legend:
- DE patients
- DE partners
- DE professionals
- DE payers/policy makers
Comparing relative DCE weights of Patients between countries

1st Norway, 2nd Spain, 3rd Hungary, 4th Croatia
Why did we put so much effort into measuring these weights?

- Because we are going to use them in the **multi-criteria decision analyses** (MCDA)
- MCDA was the method used in the empirical evaluation studies of the 17 integrated care programmes
What is MCDA?

- An **umbrella term** for a series of methods to aid decision-making that is based on more than 1 criterion, in which the relative impact of each criterion on the decision is made explicit.

- Offer a means to consider a **comprehensive set** of, sometimes conflicting, decision **criteria** (*criteria were defined in terms of outcome measures*).

- **Engage stakeholders** in a dialogue about decision criteria and their importance for the decision at hand.

- In SELFIE, the decisions relate to sustainability of programmes, i.e. reimbursement, continuation, extension, and/or wider implementation.
Why MCDA?

- When we adopt a more person-centered, integrated approach to care,
- we also need to use a broader, more inclusive approach to evaluation.
- An approach that adopts a more holistic, person-centered understanding of ‘value’.

There is more to value than health
Essence of MCDA: estimate overall value score

Integrated care

Measure performance

Overall value score

Usual care

Measure performance

Overall value score

Elicit weights

Patients
Partners
Professionals
Payers
Policy makers
How did we measure performance of programmes on criteria?

- In quasi-experimental studies comparing intervention and control group
- Combination of prospective data collection with repeated measurement plus retrospective data extraction from secondary sources
How did we measure performance?

<table>
<thead>
<tr>
<th>Programme-type specific outcomes</th>
<th>Core set of outcomes</th>
<th>Recommended questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health &amp; well-being</td>
<td>Physical functioning</td>
<td>SF-36, Katz 15</td>
</tr>
<tr>
<td></td>
<td>Psychological well-being</td>
<td>MHI-5</td>
</tr>
<tr>
<td></td>
<td>Social relationships &amp; participation</td>
<td>IPA</td>
</tr>
<tr>
<td></td>
<td>Enjoyment of life</td>
<td>ICECAP-O, Q-LES-Q</td>
</tr>
<tr>
<td></td>
<td>Resilience</td>
<td>BRS</td>
</tr>
<tr>
<td>Experience</td>
<td>Person-centeredness</td>
<td>P3CEQ</td>
</tr>
<tr>
<td></td>
<td>Continuity of care</td>
<td>NCQ, CPCQ</td>
</tr>
<tr>
<td>Costs</td>
<td>Costs</td>
<td>iMTA_MCQ</td>
</tr>
</tbody>
</table>

SF-36: Short Form 36, Katz 15 for ADL, MHI: Mental Health Inventory, IPA: Impact on Participation and Autonomy (social life and relationships domain), ICECAP-O: Investigating Choice Experiments for the preferences of Older people CAPability measure (item on enjoyment and pleasure), Q-LES-Q: Quality of Life, Enjoyment and Satisfaction Questionnaire (item on life satisfaction), BRS: Brief Resilience Scale, P3CEQ: Person-centered Coordinated Care Experience Questionnaire (experience of person-centered care domain), NCQ: Nijmegen Continuity Questionnaire (Team and cross boundary continuity domain), CPCQ: Client Perceptions of Coordination Questionnaire (item on waiting for appointment/treatment), iMTA_MCQ: iMTA Medical Consumption Questionnaire
## Standardising performance scores

<table>
<thead>
<tr>
<th>Experience</th>
<th>Instrument</th>
<th>Scale</th>
<th>Integrated</th>
<th>Usual</th>
<th>Integrated</th>
<th>Usual</th>
</tr>
</thead>
<tbody>
<tr>
<td>🌐</td>
<td>P3CEQ</td>
<td>0-18 (best)</td>
<td>16</td>
<td>10</td>
<td>0,85</td>
<td>0,53</td>
</tr>
<tr>
<td>🔄</td>
<td>NCQ + CPCQ</td>
<td>1-5 (best)</td>
<td>5</td>
<td>4</td>
<td>0,78</td>
<td>0,62</td>
</tr>
</tbody>
</table>

### Formula relative standardisation:

(with 2 alternatives):

\[
S_{aj} = \frac{x_{aj}}{(x_{aj}^2 + x_{bj}^2)^{1/2}}
\]

- \(x = \) outcome score (on the natural scale)
- \(a = \) alternative a
- \(b = \) alternative b
- \(j = \) outcome j
Example of relative DCE weights of patients in the Netherlands

<table>
<thead>
<tr>
<th></th>
<th>Weight Patients</th>
<th>Weight Payers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health/wellbeing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0,16</td>
<td>0,14</td>
</tr>
<tr>
<td></td>
<td>0,17</td>
<td>0,18</td>
</tr>
<tr>
<td></td>
<td>0,09</td>
<td>0,10</td>
</tr>
<tr>
<td></td>
<td>0,23</td>
<td>0,24</td>
</tr>
<tr>
<td></td>
<td>0,15</td>
<td>0,12</td>
</tr>
<tr>
<td>Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0,08</td>
<td>0,06</td>
</tr>
<tr>
<td></td>
<td>0,10</td>
<td>0,08</td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0,04</td>
<td>0,07</td>
</tr>
</tbody>
</table>
## Partial value score

<table>
<thead>
<tr>
<th></th>
<th>Standardized</th>
<th>Weight</th>
<th>Partial value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Usual</td>
<td>Patients</td>
</tr>
<tr>
<td>Health/wellbeing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.77</td>
<td>0.64</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>Standardized</td>
<td>Weight</td>
<td>Partial value</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------</td>
<td>--------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td>Integrated</td>
<td>Usual</td>
<td>Patients</td>
</tr>
<tr>
<td>Health/wellbeing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.68</td>
<td>0.73</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>0.77</td>
<td>0.64</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>0.34</td>
<td>0.25</td>
<td>0.09</td>
</tr>
<tr>
<td></td>
<td>0.80</td>
<td>0.60</td>
<td>0.23</td>
</tr>
<tr>
<td></td>
<td>0.78</td>
<td>0.62</td>
<td>0.15</td>
</tr>
<tr>
<td>Experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.85</td>
<td>0.53</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>0.78</td>
<td>0.62</td>
<td>0.10</td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.20</td>
<td>0.40</td>
<td>0.04</td>
</tr>
<tr>
<td>Total value score</td>
<td>0.71</td>
<td>0.59</td>
<td></td>
</tr>
</tbody>
</table>
Repeat with weights from different stakeholders

<table>
<thead>
<tr>
<th>Health/wellbeing</th>
<th>Standardized</th>
<th>Weight</th>
<th>Weight</th>
<th>Partial value</th>
<th>Partial value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Integrated</td>
<td>Patients</td>
<td>Payers</td>
<td>Patients</td>
<td>Payers</td>
</tr>
<tr>
<td>Health/wellbeing</td>
<td>0,68</td>
<td>0,16</td>
<td>0,14</td>
<td>0,11</td>
<td>0,12</td>
</tr>
<tr>
<td></td>
<td>0,77</td>
<td>0,17</td>
<td>0,18</td>
<td>0,13</td>
<td>0,11</td>
</tr>
<tr>
<td></td>
<td>0,34</td>
<td>0,09</td>
<td>0,10</td>
<td>0,03</td>
<td>0,02</td>
</tr>
<tr>
<td></td>
<td>0,80</td>
<td>0,23</td>
<td>0,24</td>
<td>0,18</td>
<td>0,14</td>
</tr>
<tr>
<td></td>
<td>0,78</td>
<td>0,15</td>
<td>0,12</td>
<td>0,12</td>
<td>0,09</td>
</tr>
<tr>
<td>Experience</td>
<td>0,85</td>
<td>0,08</td>
<td>0,06</td>
<td>0,06</td>
<td>0,04</td>
</tr>
<tr>
<td></td>
<td>0,78</td>
<td>0,10</td>
<td>0,08</td>
<td>0,08</td>
<td>0,07</td>
</tr>
<tr>
<td>Cost</td>
<td>0,20</td>
<td>0,04</td>
<td>0,07</td>
<td>0,01</td>
<td>0,01</td>
</tr>
<tr>
<td>Total value score</td>
<td>0,71</td>
<td></td>
<td></td>
<td>0,59</td>
<td>0,68</td>
</tr>
</tbody>
</table>

Standardized Patients Payers Partial value Partial value
From standardization of performance scores to final table with MCDA results
Sensitivity analyses

- Deterministic: e.g. use Swing Weights instead of DCE weights, use global ranging standardization instead of relative standardization

- Probabilistic: Monte Carlo simulation to take the joint uncertainty in performance and weights into account (uncertainty in programme-costs and size of target population can be addresses as well)
Conditional Multi-attribute Acceptability Curve (CMAC)

P(intervention) acceptable:

- Diff in overall value > 0
- Size target population x mean costs pp < available budget
Conclusion

- MCDA is an approach with great potential to improve value-based integrated care and value-based payments because it includes a wide range of outcomes, and weights them from multiple perspectives.

- The methods and weights we applied in SELFIE can be used by stakeholders (e.g. commissioners, insurers, local authorities, providers) in future evaluations and monitoring studies of integrated care.
Strengthening the evidence-base of integrated care for people with multi-morbidity in Europe using Multi-Criteria Decision Analysis (MCDA)
Multi-Criteria Decision Analyses of Integrated Care in the SELFIE project

Maureen Rutten-van Molken, coordinator of SELFIE

Spotlight on Multi-Criteria Decision Analyses of integrated care for person with multi-morbidity

1: Care Chain Frail Elderly, the Netherlands
2: Mobile Palliative Care Support Team, Croatia
3: Salford Together, United Kingdom

SELFIE Final conference, 13th of June
MCDA case study:
Care Chain Frail Elderly

Maaike Hoedemakers, Milad Karimi, Willemijn Looman,
Maureen Rutten-van Mölken

SELFIE Final conference, 13th of June

https://www.selfie2020.eu/
Care Chain Frail Elderly
Target group

Community-dwelling frail elderly with complex care needs
Aim

To support frail elderly in living at home with the support of primary care, home care, social care and informal care to optimize their quality of life.

And, from the payers’ perspective:

To deliver structured multidisciplinary (primary) care that:

- decreases the demand for secondary care
- postpones nursing home admissions
- reduces health care costs
Care process

Main focus areas:
- Community
- Transfer care
- Polypharmacy

**Case finding**
- By ‘primary care core group’ (GP, nurse practitioner elderly care, district nurse) that meet every 4-6 weeks

**Holistic assessment**
- Nurse practitioner elderly care visits frail elderly at home to make an inventory of problems, existing care and personal goals which results in a draft individualised care plan

**Multidisciplinary team meeting**
- With GP, nurse practitioner elderly care, elderly care physician, other relevant professionals, patient, informal caregiver to discuss individualised care plan

**Care coordination**
- By nurse practitioner elderly care, organises multidisciplinary team meetings, maintains individualised care plan

**Case management**
- By either nurse practitioner elderly care, district nurse, or case worker dementia; provides tailored and integrated care, monitors, provides support
Methods – study design

- Intervention group
- Control group

- Baseline
- 6 months
- 12 months

Registry data

SELFIE 2020
## Methods – outcome measures

<table>
<thead>
<tr>
<th>Triple aim</th>
<th>Core set</th>
<th>Programme type specific: Frail elderly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health &amp; well-being</td>
<td>Physical functioning</td>
<td>Autonomy</td>
</tr>
<tr>
<td></td>
<td>Psychological well-being</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social relations &amp; participation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enjoyment of life</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Resilience</td>
<td></td>
</tr>
<tr>
<td>Experience</td>
<td>Person-centeredness</td>
<td>Burden of medication</td>
</tr>
<tr>
<td></td>
<td>Continuity of care</td>
<td></td>
</tr>
<tr>
<td>Costs</td>
<td>Total health- and social care costs</td>
<td>Long-term institution admissions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Falls leading to hospital admissions</td>
</tr>
</tbody>
</table>
Methods – analysis

* Propensity score matching on
  * age, gender, marital status, living situation, education, smoking, outcome measures at baseline, costs 3 month prior to start

* Linear mixed models with random intercept for continuous outcomes after Inverse Probability Weighting (IPW)

\[ Y_{it} = \beta_0 + \beta_1 \text{time} + \beta_2 \text{intervention} + \beta_3 \text{age} + \beta_4 \text{time*intervention} + u_i + e_{it} \]

* Ordered logit regression for enjoyment of life, after IPW

* Models used to predict absolute values of the outcomes in intervention and control group

* As part of the MCDA all predicted outcomes were standardized into the same numeric range from 0-1, where a higher score indicates a better performance

* MCDA: weighted aggregation of outcomes into overall value score
## Total health- and social care costs

<table>
<thead>
<tr>
<th>Measured with medical consumption questionnaire</th>
<th>Intervention group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td>General practitioner</td>
<td>General practitioner</td>
<td></td>
</tr>
<tr>
<td>Paramedical (e.g., physiotherapist)</td>
<td>Paramedical (e.g., physiotherapist)</td>
<td></td>
</tr>
<tr>
<td>Medical specialist</td>
<td>Medical specialist</td>
<td></td>
</tr>
<tr>
<td>Outpatient daycare activities</td>
<td>Outpatient daycare activities</td>
<td></td>
</tr>
<tr>
<td>Emergency room visits</td>
<td>Emergency room visits</td>
<td></td>
</tr>
<tr>
<td>Hospital admissions</td>
<td>Hospital admissions</td>
<td></td>
</tr>
<tr>
<td>Nursing home admissions (and other admissions)</td>
<td>Nursing home admissions (and other admissions)</td>
<td></td>
</tr>
<tr>
<td>Home care</td>
<td>Home care</td>
<td></td>
</tr>
<tr>
<td>Informal care</td>
<td>Informal care</td>
<td></td>
</tr>
<tr>
<td>Registry data</td>
<td>Medication</td>
<td>Medication</td>
</tr>
<tr>
<td>Cost of the frail elderly care programme (mean of three care groups)</td>
<td>Cost of other (single disease) chronic care programmes, e.g. diabetes, COPD, VRM based on % of patients in particular care programme</td>
<td></td>
</tr>
</tbody>
</table>
(Preliminary) results
Patient flow

**Intervention group**
- Invited: N=340
- Included T0: N=222
- Completed T1: N=172 (77%)
- Completed T2: N=132 (ongoing)

**Control group**
- Invited: N=249
- Included T0: N=162
- Completed T1: N=129 (80%)
- Completed T2: N=60 (ongoing)

**Reasons for dropouts**

**Intervention group**
- Not interested: 40
  - Too intensive: 49
  - Other: 29
- Died: 15
  - Too intensive: 8
  - Cognitive not able: 10
  - Other: 17
- Died: 11
  - Too intensive: 2
  - Cognitive not able: 2
  - Other: 1

**Control group**
- Not interested: 26
  - Too intensive: 48
  - Other: 13
- Died: 9
  - Too intensive: 14
  - Cognitive not able: 0
  - Other: 10
- Died: 3
  - Too intensive: 3
  - Cognitive not able: 2
  - Other: 2
### Baseline characteristics before & after matching

<table>
<thead>
<tr>
<th></th>
<th>Intervention (n=222)</th>
<th>Control (n=162)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before PSM</td>
<td>After PSM</td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td>83.5</td>
<td>84.7</td>
</tr>
<tr>
<td><strong>Gender (female)</strong></td>
<td>64.1%</td>
<td>66.1%</td>
</tr>
<tr>
<td><strong>Married or with partner</strong></td>
<td>43.5%</td>
<td>38.7%</td>
</tr>
<tr>
<td><strong>Living situation:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independent</td>
<td>50.0%</td>
<td>58.6%</td>
</tr>
<tr>
<td>With others</td>
<td>46.0%</td>
<td>38.8%</td>
</tr>
<tr>
<td>Nursing home</td>
<td>3.4%</td>
<td>2.5%</td>
</tr>
<tr>
<td><strong>Education:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>70.3%</td>
<td>70.4%</td>
</tr>
<tr>
<td>High</td>
<td>9.5%</td>
<td>14.9%</td>
</tr>
<tr>
<td><strong>Smokers</strong></td>
<td>14.0%</td>
<td>7.7%</td>
</tr>
<tr>
<td><strong>Physical functioning (0-15)</strong></td>
<td>4.9</td>
<td>4.7</td>
</tr>
<tr>
<td><strong>Psychological wellbeing (0-100)</strong></td>
<td>71.3</td>
<td>71.2</td>
</tr>
<tr>
<td><strong>Enjoyment of life (1-4)</strong></td>
<td>2.9</td>
<td>2.9</td>
</tr>
<tr>
<td><strong>Social relat. &amp; part. (7-35)</strong></td>
<td>9.2</td>
<td>8.2</td>
</tr>
<tr>
<td><strong>Resilience (6-30)</strong></td>
<td>19.4</td>
<td>19.0</td>
</tr>
<tr>
<td><strong>Autonomy (7-35)</strong></td>
<td>22.1</td>
<td>22.2</td>
</tr>
<tr>
<td><strong>Person-centeredness (0-18)</strong></td>
<td>12.4</td>
<td>12.6</td>
</tr>
<tr>
<td><strong>Continuity of care (1-5)</strong></td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td><strong>Mean bias</strong></td>
<td>10.1</td>
<td>6.0</td>
</tr>
<tr>
<td><strong>Rubin’s B</strong></td>
<td>54.6</td>
<td>26.1</td>
</tr>
<tr>
<td><strong>Rubin’s R</strong></td>
<td>1.27</td>
<td>1.25</td>
</tr>
</tbody>
</table>
## Estimated treatment effects after 6 months

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Scale</th>
<th>Estimated treatment effect</th>
<th>95% Confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning^</td>
<td>0-15</td>
<td>0.39</td>
<td>-0.02 : 0.79</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>0-100</td>
<td>0.01</td>
<td>-3.49 : 3.55</td>
</tr>
<tr>
<td>Enjoyment of life (odds ratio)</td>
<td>-</td>
<td>1.61</td>
<td>0.82 : 3.20</td>
</tr>
<tr>
<td>Social relationships and participation^</td>
<td>0-28</td>
<td>0.27</td>
<td>-0.49 : 0.99</td>
</tr>
<tr>
<td>Resilience</td>
<td>6-30</td>
<td>0.42</td>
<td>-0.36 : 1.21</td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>0-18</td>
<td>1.04*</td>
<td>0.11 : 1.97</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>1-5</td>
<td>0.12</td>
<td>-0.06 : 0.29</td>
</tr>
</tbody>
</table>

^ = higher score indicates a worse performance
* = p<0.05
## Estimated treatment effects after 12 months

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Scale</th>
<th>Estimated treatment effect</th>
<th>95% Confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning^</td>
<td>0-15</td>
<td>0.23</td>
<td>-0.38 : 0.83</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>0-100</td>
<td>-1.11</td>
<td>-6.48 : 4.33</td>
</tr>
<tr>
<td>Enjoyment of life (odds ratio)</td>
<td>-</td>
<td>1.95</td>
<td>0.87 : 4.39</td>
</tr>
<tr>
<td>Social relationships and participation^</td>
<td>0-28</td>
<td>-0.14</td>
<td>-1.18 : 0.90</td>
</tr>
<tr>
<td>Resilience</td>
<td>6-30</td>
<td>0.11</td>
<td>-0.97 : 1.19</td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>0-18</td>
<td>2.07*</td>
<td>0.28 : 3.79</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>1-5</td>
<td>0.18</td>
<td>-0.10 : 0.45</td>
</tr>
</tbody>
</table>

^ = higher score indicates a worse performance  
* = p<0.05
Costs health care perspective: month 1-6

Intervention N=172

- General practitioner: €536
- Paramedical: €112
- Medical specialist care: €670
- Outpatient daycare: €1126
- Emergency room visits: €3358
- Hospital admissions: €2975
- Nursing home: €534
- Home care: €72
- Care programmes: €457

Control N=129

- General practitioner: €457
- Paramedical: €125
- Medical specialist care: €302
- Outpatient daycare: €487
- Emergency room visits: €291
- Hospital admissions: €1080
- Nursing home: €360
- Home care: €126
- Care programmes: €3358

Total cost:

- Intervention: €7,068
- Control: €6,110
Costs health care perspective: month 1-12

<table>
<thead>
<tr>
<th></th>
<th>Interventions N=149</th>
<th>Control N=60</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>€ 14,747</td>
<td>€ 13,970</td>
</tr>
<tr>
<td>General practitioner</td>
<td>1067</td>
<td>1068</td>
</tr>
<tr>
<td>Paramedical</td>
<td>636</td>
<td>500,60</td>
</tr>
<tr>
<td>Medical specialist care</td>
<td>1261</td>
<td>1293,58</td>
</tr>
<tr>
<td>Outpatient daycare</td>
<td>180</td>
<td>552,71</td>
</tr>
<tr>
<td>Emergency room visits</td>
<td>1255</td>
<td>700,08</td>
</tr>
<tr>
<td>Hospital admissions</td>
<td>180</td>
<td>162,67</td>
</tr>
<tr>
<td>Nursing home</td>
<td>1452</td>
<td>523,15</td>
</tr>
<tr>
<td>Home care</td>
<td>7805</td>
<td>2901,27</td>
</tr>
<tr>
<td>Home care</td>
<td>7192,30</td>
<td>143,12</td>
</tr>
<tr>
<td>Care programmes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Costs Societal perspective month 1-12

- **Intervention (N=149)**
  - Other: €5875
  - Home care: €7095
  - Informal care: €8249
  - Care programme: €1068

- **Control (N=60)**
  - Other: €6634
  - Home care: €7192
  - Informal care: €8937
  - Care programme: €143

Total costs:
- Intervention: €22,996
- Control: €22,906
MCDA

Integrated care
- Measure performance
- Overall value score

Elicit weights

Usual care
- Measure performance
- Overall value score

Patients Partners Professionals Payers Policy makers
Dutch weights for 5 stakeholder groups
MCDA Graph 6 months

* higher=better

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning</td>
<td>0.73</td>
<td>0.71</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>0.74</td>
<td>0.71</td>
</tr>
<tr>
<td>Enjoyment of life</td>
<td>0.70</td>
<td>0.73</td>
</tr>
<tr>
<td>Social relationships &amp; Participation</td>
<td>0.71</td>
<td>0.70</td>
</tr>
<tr>
<td>Resilience</td>
<td>0.74</td>
<td>0.72</td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>0.68</td>
<td>0.70</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>0.65</td>
<td>0.70</td>
</tr>
<tr>
<td>Total health- and social care costs</td>
<td>0.00</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Weights:
- Physical functioning: 0.16
- Psychological well-being: 0.17
- Enjoyment of life: 0.23
- Social relationships & Participation: 0.08
- Resilience: 0.15
- Person-centeredness: 0.08
- Continuity of care: 0.10
- Total health- and social care costs: 0.03
### MCDA Table (6 months, health care persp.)

<table>
<thead>
<tr>
<th></th>
<th>Standardised performance score</th>
<th>Weighted score</th>
<th>Weighted score</th>
<th>Weighted score</th>
<th>Weighted score</th>
<th>Weighted score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intervention</td>
<td>Control</td>
<td>Intervention</td>
<td>Control</td>
<td>Intervention</td>
<td>Control</td>
</tr>
<tr>
<td><strong>Health &amp; well-being</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical functioning</td>
<td>0.68</td>
<td>0.73</td>
<td>0.11</td>
<td>0.12</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>0.71</td>
<td>0.71</td>
<td>0.12</td>
<td>0.12</td>
<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td>Enjoyment of life</td>
<td>0.74</td>
<td>0.67</td>
<td>0.17</td>
<td>0.15</td>
<td>0.19</td>
<td>0.17</td>
</tr>
<tr>
<td>Social relationships &amp; participation</td>
<td>0.70</td>
<td>0.72</td>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>Resilience</td>
<td>0.71</td>
<td>0.70</td>
<td>0.11</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td><strong>Experience with care</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>0.74</td>
<td>0.68</td>
<td>0.06</td>
<td>0.05</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>0.72</td>
<td>0.70</td>
<td>0.07</td>
<td>0.07</td>
<td>0.09</td>
<td>0.09</td>
</tr>
<tr>
<td><strong>Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total costs</td>
<td>0.65</td>
<td>0.76</td>
<td>0.02</td>
<td>0.03</td>
<td>0.04</td>
<td>0.05</td>
</tr>
<tr>
<td><strong>Overall value scores</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.71</td>
<td>0.70</td>
<td>0.70-0.73</td>
<td>0.68-0.71</td>
<td>0.71</td>
<td>0.70</td>
</tr>
<tr>
<td>% overall value score intervention &gt; control</td>
<td>86%</td>
<td>89%</td>
<td>86%</td>
<td>82%</td>
<td>85%</td>
<td></td>
</tr>
</tbody>
</table>
### MCDA Table (12 months, health care persp.)

<table>
<thead>
<tr>
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<th>Standardised performance score</th>
<th>Weighted score</th>
<th>Weighted score</th>
<th>Weighted score</th>
<th>Weighted score</th>
<th>Weighted score</th>
<th>Weighted score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intervention</td>
<td>Control</td>
<td>Intervention</td>
<td>Control</td>
<td>Intervention</td>
<td>Control</td>
<td>Intervention</td>
</tr>
<tr>
<td><strong>Health &amp; well-being</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical functioning</td>
<td>0.69</td>
<td>0.72</td>
<td>0.11</td>
<td>0.11</td>
<td>0.08</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>0.70</td>
<td>0.71</td>
<td>0.12</td>
<td>0.12</td>
<td>0.10</td>
<td>0.10</td>
<td>0.12</td>
</tr>
<tr>
<td>Enjoyment of life</td>
<td>0.76</td>
<td>0.65</td>
<td>0.17</td>
<td>0.15</td>
<td>0.19</td>
<td>0.16</td>
<td>0.17</td>
</tr>
<tr>
<td>Social relationships &amp; participation</td>
<td>0.71</td>
<td>0.70</td>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
<td>0.08</td>
</tr>
<tr>
<td>Resilience</td>
<td>0.71</td>
<td>0.71</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.09</td>
</tr>
<tr>
<td><strong>Experience with care</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>0.76</td>
<td>0.65</td>
<td>0.06</td>
<td>0.05</td>
<td>0.06</td>
<td>0.05</td>
<td>0.06</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>0.72</td>
<td>0.69</td>
<td>0.07</td>
<td>0.07</td>
<td>0.09</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td><strong>Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total costs</td>
<td>0.69</td>
<td>0.73</td>
<td>0.02</td>
<td>0.02</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
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<tr>
<td><strong>Overall value scores</strong></td>
<td><strong>0.72</strong></td>
<td><strong>0.69</strong></td>
<td><strong>0.72</strong></td>
<td><strong>0.69</strong></td>
<td><strong>0.72</strong></td>
<td><strong>0.69</strong></td>
<td><strong>0.72</strong></td>
</tr>
</tbody>
</table>
Conclusion

- **CCFE improved patient-centeredness**
- However, this has little impact on the overall value score because the weight of this outcome is relatively low

- **Overall value score is higher** in the intervention group than in the control group, for all stakeholder groups
- This is mainly caused by (the high weight of) enjoyment of life
- However, differences are very small and not significant,
- Although they tend to increase between 6 and 12 months?
Discussion

- Preliminary results because data collection ongoing
  - Medication costs – ongoing
  - Nursing home admissions – check

- External validity: difficulty of measuring outcomes in frail elderly
  - Of the total number of 570 enrolled in CCFE we invited 340 and included 222

- Self-reported care utilization
- Useful to inform decision making
MCDA case study: Palliative Care – Croatia

Mirjana Huić, Romana Tandara Haček, Darija Erčević, Renata Grenchko, Marta Ćivljak, Tina Poklepović Peričić, Livia Puljak, Ana Utrobičić, Ana Jerončić

SELFIE Final conference, 13th of June
Palliative Care Model → Model of integrated chronic care for palliative patients

- Strategic Plan for Palliative Care 2014–2016
- National Development Program for Palliative Care in Croatia 2017–2020
- Structured palliative care system with the provision of organized, appropriate care for terminal patients and support for their family members
- Holistic assessment of patient and interdisciplinary approach to treatment → vertical, horizontal and intersectoral collaboration
ORGANIZATION OF PALLIATIVE CARE SYSTEM IN CROATIA

PATIENT RECOGNIZED AS PALLIATIVE (ICD Z51.5)
- SPIC™: Supportive & Palliative Care Indicators Tool

MEDICAL CARE
- INPATIENT PALLIATIVE CARE
  - HOSPITAL
  - DAY CARE HOSPITAL
  - INFIRMARY
- OUTPATIENT PALLIATIVE CARE
  - GP
  - COMMUNITY NURSE
- MOBILE MULTIDISCIPLINARY SPECIALIST PALLIATIVE CARE TEAM (MMSPCT)

NONMEDICAL CARE
- SOCIAL CARE
- SPIRITUAL CARE
- VOLUNTEERS
- OFFICE FOR RENTING MEDICAL AIDS

COORDINATION CENTERS (County level)
MOBILE MULTIDISCIPLINARY SPECIALIST PALLIATIVE CARE TEAM (MMSPCT)

 ayrıntılar seküldürülür.
Primary study on Palliative Care Model –
Aim and research question

How the “Palliative Care Model”, specifically treatment by a MMSPCT, affects health and well-being, experience of care, resource utilization and costs, in comparison to usual care?
**Methods - Study protocol**

**Study design:** Prospective cohort study with 6 months follow-up

**Measurement times:**
- **T0** = at enrolment
- **T1** = after 1 month
- **T2** = after 3 months

**Sample size**
- **Exposed group:** 150-200 palliative care patients
- **Control group:** 150-200 palliative care patients

**DATA ANALYSIS**
- MCDA
Inclusion criteria:

- Palliative care patients (SPICT™ and ICD-10: Z51.5)
- 18 years or older
- With a life expectancy ranging from 1 to 6 months

Exclusion criteria:

- Patients and/or families who refuse further care by the MMSPCT or usual care
- Patients who are not able to give answers in questionnaires (have a cognitive condition or are unresponsive or nonverbal)
- Patients unlikely to survive more than 1-month based on their clinicians’ judgments
- Patients who do not want to sign informed consent
DATA COLLECTION

SELFIE Questionnaire

Outcomes related to:

- **I Health/well-being** *(Activities of daily living, Psychological well-being, Life satisfaction, Social relationship and participation, Resilience, 3- and 6-month overall mortality rate, Pain and other symptoms)*

- **II Experiences with care** *(Person-centeredness, Continuity of care, Compassionate care, Timely access to care, Preferred place of death)*

- **III Resource utilization and costs** *(Health and social care costs, Informal caregiving)*
Data analyses and MCDA

Propensity score matching

• Propensity score matching using kernel matching method (Epanechnikov kernel and bandwidth of 0.06)

• Balance of propensity scores checked by checking common support assumption, testing covariate imbalance at baseline, and calculating overall measures of covariate imbalance (Pseudo R2, median bias, Rubin’s B and R)

• Covariate selection was guided by trade-offs between variables’ effects on bias and efficiency

MCDA: weighted aggregation of outcomes into overall value score
(Preliminary) Results

- Participants flow
- PSM results
- MCDA overall value table
Patient flow

Exposed group

Assessed
N=238

Eligible
N=229

Included T0
N=220

Completed T1
N=153 (69.5%)

Completed T2
N=94 (42.7%)

Control group

Assessed
N=198

Eligible
N=198

Included T0
N=190

Completed T1
N=164 (86.3%)

Completed T2
N=124 (65.3%)

N= 67
Died: 25
Not followed by MMSPCT: 21
Refused MMSPCT: 10
Other: 11

N= 59
Died: 29
Not followed by MMSPCT: 9
Other: 21

N=26
Died: 25
Other: 1

N=40
Died: 30
Moved to institution: 5
Other: 5
PSM - Covariates used (including the baseline core outcome variables)

Covariates:

- Age
- Gender
- Education
- Marital status
- Living situation (reclassified as Independent, With others, and Care/nursing home)
- Smoking
- Number of conditions reported
- Core outcome variables at baseline
Graphical summary of covariate imbalance, showing the distribution of the standardised percentage bias across covariates – before and after the matching.
## Baseline comparison – after PSM

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female (%)</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Age</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td>Low education</td>
<td>82%</td>
<td>84%</td>
</tr>
<tr>
<td>Middle education</td>
<td>15%</td>
<td>13%</td>
</tr>
<tr>
<td>Married</td>
<td>61%</td>
<td>58%</td>
</tr>
<tr>
<td>Widower</td>
<td>26%</td>
<td>35%</td>
</tr>
<tr>
<td>Living with partner/children</td>
<td>86%</td>
<td>79%</td>
</tr>
<tr>
<td>Living in care/nursing home</td>
<td>0.5%</td>
<td>3%</td>
</tr>
<tr>
<td>Multimorbidity (No of conditions)</td>
<td>24%</td>
<td>21%</td>
</tr>
</tbody>
</table>
## Core set of outcomes - Results after 1 month

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Scale</th>
<th>Estimated treatment effect, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning(^)</td>
<td>0-15</td>
<td>0.30 (-0.88, 1.37)</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>0-100</td>
<td>-0.59 (-5.61, 3.56)</td>
</tr>
<tr>
<td>Social relationships and participation(^)</td>
<td>0-28</td>
<td>0.04 (-1.23, 1.27)</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>1-5</td>
<td>-0.05 (-0.35, 0.23)</td>
</tr>
<tr>
<td>Resilience</td>
<td>6-30</td>
<td>-0.22 (-1.58, 1.16)</td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>0-18</td>
<td>0.82 (-0.08, 1.55)</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>1-5</td>
<td>0.06 (-0.07, 0.19)</td>
</tr>
</tbody>
</table>

\(^\) = higher score indicates a worse performance
## Core set of outcomes - Results after 3 months

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Scale</th>
<th>Estimated treatment effect, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning^</td>
<td>0-15</td>
<td>-0.29 (-1.71, 1.24)</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>0-100</td>
<td>3.90 (-2.86, 9.34)</td>
</tr>
<tr>
<td>Social relationships and participation^</td>
<td>0-28</td>
<td>-0.97 (-2.45, 0.61)</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>1-5</td>
<td>-0.05 (-0.35, 0.23)</td>
</tr>
<tr>
<td>Resilience</td>
<td>6-30</td>
<td>-0.11 (-1.47, 1.77)</td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>0-18</td>
<td>1.61 (0.54, 2.64)</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>1-5</td>
<td>0.21 (-0.06, 0.39)</td>
</tr>
</tbody>
</table>

^ = higher score indicates a worse performance
Programme specific outcomes - Results after 1 month and 3 months

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Estimated treatment effect after 1 month, 95% CI</th>
<th>Estimated treatment effect after 3 months, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning</td>
<td>-1.80 (-8.35, 6.75)</td>
<td>3.11 (-6.43, 13.33)</td>
</tr>
<tr>
<td>Emotional functioning</td>
<td>2.35 (-4.49, 8.89)</td>
<td>6.84 (-0.83, 13.64)</td>
</tr>
<tr>
<td>Fatigue</td>
<td>3.84 (-2.35, 9.80)</td>
<td>1.00 (-7.43, 11.18)</td>
</tr>
<tr>
<td>Pain</td>
<td><strong>-8.35 (-14.63, -0.07)</strong></td>
<td>-9.21 (-16.27, 1.45)</td>
</tr>
<tr>
<td>Quality of life</td>
<td>3.49 (-2.80, 8.39)</td>
<td><strong>7.04 (0.47, 17.53)</strong></td>
</tr>
<tr>
<td>Nausea and vomiting</td>
<td>2.87 (-2.00, 10.54)</td>
<td>-1.61 (-7.32, 4.42)</td>
</tr>
<tr>
<td>Dyspnoea</td>
<td>-2.24 (-9.76, 6.51)</td>
<td>-7.43 (-18.24, 1.59)</td>
</tr>
<tr>
<td>Insomnia</td>
<td>1.09 (-5.45, 8.91)</td>
<td>-0.86 (-9.50, 7.75)</td>
</tr>
<tr>
<td>Appetite loss</td>
<td>4.77 (-2.87, 11.77)</td>
<td>-3.89 (-11.76, 6.47)</td>
</tr>
<tr>
<td>Constipation</td>
<td>4.29 (-2.80, 10.97)</td>
<td>-5.57 (-13.85, 4.51)</td>
</tr>
</tbody>
</table>
Programme specific outcomes - Results after 1 month and 3 months

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Estimated treatment effect after 1 month, 95% CI</th>
<th>Estimated treatment effect after 3 months, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compassionate care</td>
<td>2.86 (-0.83, 7.29)</td>
<td>4.68 (-0.16, 10.30)</td>
</tr>
<tr>
<td>Alive after 3 months</td>
<td>NA</td>
<td>-0.05 (-0.17, 0.06)</td>
</tr>
<tr>
<td>Preferred place of death</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At home</td>
<td>NA</td>
<td>0.033 (-0.03, 0.13)</td>
</tr>
<tr>
<td>Home for elderly</td>
<td>NA</td>
<td>-0.07 (-0.11, -0.03)</td>
</tr>
<tr>
<td>Other</td>
<td>NA</td>
<td>0.04 (-0.05, 0.11)</td>
</tr>
<tr>
<td>Preferred vs actual place of death</td>
<td>NA</td>
<td>0.23 (0.04, 0.47)</td>
</tr>
</tbody>
</table>
MCDA
Weight elicitation results - Croatia

→ Relative weights of outcomes used in MCDA (Patients and Partners)

<table>
<thead>
<tr>
<th>Relative weights (0-1)</th>
<th>Patients</th>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning</td>
<td>0.09</td>
<td>0.08</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>0.14</td>
<td>0.14</td>
</tr>
<tr>
<td>Social participation &amp; relationships</td>
<td>0.11</td>
<td>0.10</td>
</tr>
<tr>
<td>Enjoyment of life</td>
<td>0.19</td>
<td>0.19</td>
</tr>
<tr>
<td>Resilience</td>
<td>0.15</td>
<td>0.12</td>
</tr>
<tr>
<td>Person-centerededness</td>
<td>0.13</td>
<td>0.14</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>0.16</td>
<td>0.19</td>
</tr>
<tr>
<td>Total costs</td>
<td>0.03</td>
<td>0.04</td>
</tr>
</tbody>
</table>
Relative DCE weights for patients: NL vs HU vs HR

Netherlands (1) vs Hungary (2) vs Croatia (3)

Health & well-being

Experience

Costs

- Physical functioning
- Psychological well-being
- Social relations & participation
- Enjoyment of life
- Resilience
- Person-centeredness
- Continuity of care
- Total costs
### MCDA overall value table at 1 month (Patients/Partners)

<table>
<thead>
<tr>
<th>Health &amp; well-being</th>
<th>Standardised performance score</th>
<th>Weighted score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IC</td>
<td>UC</td>
</tr>
<tr>
<td>Physical functioning</td>
<td>0.73</td>
<td>0.69</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>0.70</td>
<td>0.72</td>
</tr>
<tr>
<td>Social relationships and participation</td>
<td>0.71</td>
<td>0.71</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>0.71</td>
<td>0.71</td>
</tr>
<tr>
<td>Resilience</td>
<td>0.71</td>
<td>0.71</td>
</tr>
<tr>
<td>Experience with care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>0.73</td>
<td>0.68</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>0.71</td>
<td>0.70</td>
</tr>
<tr>
<td><strong>Overall value scores</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Relative standardisation is used to standardise the outcomes on a scale from 0-1.
## MCDA overall value table at 3 months *(Patients/Partners)*

<table>
<thead>
<tr>
<th></th>
<th>Standardised performance score</th>
<th>Weighted score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IC</td>
<td>UC</td>
</tr>
<tr>
<td><strong>Health &amp; well-being</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical functioning</td>
<td>0.74</td>
<td>0.67</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>0.72</td>
<td>0.70</td>
</tr>
<tr>
<td>Social relationships and participation</td>
<td>0.73</td>
<td>0.68</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>0.70</td>
<td>0.72</td>
</tr>
<tr>
<td>Resilience</td>
<td>0.70</td>
<td>0.71</td>
</tr>
<tr>
<td><strong>Experience with care</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>0.75</td>
<td>0.66</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>0.73</td>
<td>0.69</td>
</tr>
<tr>
<td>Costs</td>
<td>0.74</td>
<td>0.63</td>
</tr>
<tr>
<td><strong>Overall value scores</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Relative standardisation is used to standardise the outcomes on a scale from 0-1.
## Costs (drugs, med. devices, hospitalisation - acute and chronic) at 3 months in EUR

<table>
<thead>
<tr>
<th>Group</th>
<th>Exposed</th>
<th>Control</th>
<th>Diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drugs</td>
<td>44.635,99</td>
<td>42.248,22</td>
<td>2.387,77</td>
</tr>
<tr>
<td>Medical devices</td>
<td>30.805,53</td>
<td>23.642,04</td>
<td>7.163,49</td>
</tr>
<tr>
<td>Acute Hospitalisation</td>
<td>164.396,09</td>
<td>134.803,08</td>
<td>29.593,01</td>
</tr>
<tr>
<td>Chronic Hospitalisation</td>
<td>11.652,43</td>
<td>51.947,73</td>
<td>-40.295,3</td>
</tr>
<tr>
<td>Total costs</td>
<td>251.490,03</td>
<td>252.641,07</td>
<td>-1.151,04</td>
</tr>
</tbody>
</table>
Discussion

• Exposed group scores a higher overall value for two stakeholder groups (Patients and Partners) at 3 months
• Differences are mainly caused by Person-centeredness and Continuity of care
• Demonstration of application of MCDA to combine various outcomes
• Exposed (MMSPCT) group - Costs saving in relation to chronic hospitalisation
• Analysis still ongoing (95% CI around the overall value score; MCDA with weights for the other 3P’s…)

• Limitations: short period of follow-up

Noticed problem in Palliative care in Croatia
Palliative patients are still refered rather late to MMSPCT → finding of the solution
Thanks for your attention!

Questions?

Acknowledgements

Department for Development, Research and HTA, Agency for Quality and Accreditation in Health Care and Social Welfare (on 01/01/2019 merged with MoH), Zagreb, Croatia conducted this primary research in collaboration with relevant partners on counties level (City of Zagreb, Istria, Primorje-Gorski Kotar, Karlovac, Koprivnica-Križevci, and Zagreb Counties), Ministry of Health, Ministry of Demography, Family, Youth and Social Policy, and Croatian Health Insurance Fund.
MCDA case study: Salford Together Programme

Jonathan Stokes
(on behalf of UNIMAN)

SELFIE Final conference, 13th of June

https://www.selfie2020.eu/
Outline

- The Salford Together programme
- Analysis approach
- Outcomes
- UK Weights
- Results
- Discussion
The Salford Together programme

🌟 Population health management programme (~250,000)

🌟 Initially over 65, later expanded to all adults

🌟 Organisational changes – Integrated Care Organisation; Integrated medical record; Pooled health and social care funding
The Salford Together programme

- Three overarching interventions
  - MDT case management of the highest-risk patients by neighbourhood groups
  - Centre of contact – a centralised telephone hub to help with navigating services and self-management (via health coaching)
  - Community assets – investment in community resources to promote social interaction and active lifestyle later in life

![Diagram showing service delivery and changes]

- Pre-period
- Service delivery changes
- Service delivery + Organisational changes

Able Sally: 71%: c. 24,850
Needs Some Help: 17%: c. 6,000
Needs More Help: 9%: c. 3,100
Needs A Lot Of Help: 3%: c. 1,050
Analysis approach

- Choose ‘start date’
  - NHS Vanguard, + ~£5m per year

- Choose ‘population’
  - Multimorbid, 2 or more chronic conditions
  - More likelihood of being directly ‘treated’
  - But, in any case, trying to change population-level outcomes

- Difference-in-difference + IPW/ LDV approach (robust statistical techniques)
Outcomes

Population-level analysis, rely on readily available datasets

- GP Patient Survey (survey, 2 million randomly selected from all GP practices England)
- Hospital Episode Statistics (all hospital contacts with NHS)
- (CLASSIC dataset, cohort of 3000 patients over 65 in Salford – no control group)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Dataset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning</td>
<td>GPPS</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>GPPS</td>
</tr>
<tr>
<td>Enjoyment of life</td>
<td>CLASSIC</td>
</tr>
<tr>
<td>Social relationships and participation</td>
<td>CLASSIC</td>
</tr>
<tr>
<td>Resilience</td>
<td>GPPS</td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>GPPS</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>GPPS</td>
</tr>
<tr>
<td>Total secondary care costs</td>
<td>HES</td>
</tr>
</tbody>
</table>
UK Weights

Physical functioning
Psychological well-being
Enjoyment of life
Social relations & part
Resilience
Person-centeredness
Continuity of care
Total costs

Patients
Partners
Professionals
Payers/Policy makers
## Preliminary Results

<table>
<thead>
<tr>
<th>Core outcomes</th>
<th>Scale</th>
<th>Estimated effect of the program</th>
<th>Confidence interval</th>
<th>**=p&lt;0.05; #=estimate to be updated before final report, currently 1 year post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health/Well-being</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical functioning</td>
<td>1-15</td>
<td>0.006</td>
<td>[-0.114; 0.126]</td>
<td></td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>1-5</td>
<td>0.019</td>
<td>[-0.024; 0.063]</td>
<td></td>
</tr>
<tr>
<td>Enjoyment of life</td>
<td>1-5</td>
<td>-0.047</td>
<td>[-0.110; 0.014]</td>
<td></td>
</tr>
<tr>
<td>Social relationships and participation</td>
<td>0-13</td>
<td><strong>0.339</strong></td>
<td>[0.148; 0.530]</td>
<td></td>
</tr>
<tr>
<td>Resilience</td>
<td>1-9</td>
<td>0.03</td>
<td>[-0.041; 0.100]</td>
<td></td>
</tr>
<tr>
<td>Experience of care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>1-27</td>
<td>0.046</td>
<td>[-0.190; 0.282]</td>
<td></td>
</tr>
<tr>
<td>Continuity of care</td>
<td>1-5</td>
<td>0.012</td>
<td>[-0.063; 0.088]</td>
<td></td>
</tr>
<tr>
<td>Costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total secondary care costs #</td>
<td>-</td>
<td>-1.312</td>
<td>[-3.124; 0.502]</td>
<td></td>
</tr>
</tbody>
</table>
### Results

<table>
<thead>
<tr>
<th></th>
<th>Standardised performance score</th>
<th>Patients</th>
<th>Partners</th>
<th>Professionals</th>
<th>Payers/ Policy makers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weighted score</td>
<td>Weighted score</td>
<td>Weighted score</td>
<td>Weighted score</td>
<td>Weighted score</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>Control</td>
<td>Intervention</td>
<td>Control</td>
<td>Intervention</td>
</tr>
<tr>
<td><strong>Health &amp; well-being</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical functioning</td>
<td>0.709</td>
<td>0.705</td>
<td>0.096</td>
<td>0.095</td>
<td>0.061</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>0.709</td>
<td>0.705</td>
<td>0.102</td>
<td>0.101</td>
<td>0.118</td>
</tr>
<tr>
<td>Enjoyment of life</td>
<td>0.702</td>
<td>0.712</td>
<td>0.168</td>
<td>0.171</td>
<td>0.186</td>
</tr>
<tr>
<td>Social relationships &amp; participation</td>
<td>0.785</td>
<td>0.619</td>
<td>0.089</td>
<td>0.070</td>
<td>0.097</td>
</tr>
<tr>
<td>Resilience</td>
<td>0.709</td>
<td>0.705</td>
<td>0.086</td>
<td>0.085</td>
<td>0.084</td>
</tr>
<tr>
<td><strong>Experience with care</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person-centeredness</td>
<td>0.708</td>
<td>0.706</td>
<td>0.057</td>
<td>0.057</td>
<td>0.059</td>
</tr>
<tr>
<td>Continuity of care</td>
<td>0.708</td>
<td>0.706</td>
<td>0.074</td>
<td>0.073</td>
<td>0.064</td>
</tr>
<tr>
<td><strong>Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total costs #</td>
<td>0.733</td>
<td>0.680</td>
<td>0.047</td>
<td>0.044</td>
<td>0.047</td>
</tr>
<tr>
<td><strong>Overall value scores</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>0.718</strong></td>
<td>0.696</td>
<td><strong>0.717</strong></td>
<td>0.694</td>
<td><strong>0.718</strong></td>
</tr>
</tbody>
</table>

#=estimate to be updated before final report, currently 1 year post. Inverted, higher score = better performance.
Discussion - Limitations

- Capturing effects on those directly ‘treated’?
  - Population health management

- Treating as too much of a black box?
  - (Separate analysis, we look at specific intervention effects; MDGs in Salford)

- Outcome measures close enough to conceptual?
  - e.g. ‘continuity of care’ measures how often the patient speaks to or sees their preferred GP; ‘resilience’ captures activities of daily living and confidence in managing own care

- Sensitivity analysis
  - Drop and re-weight outcomes that are less in line with conceptual/CLASSIC
  - Re-run on MM 3+ patients
  - Estimate uncertainty on overall value score
Discussion

🌟 Social relationships outcome good indication for longer-term?

🌟 “Participation in community assets is associated with substantially higher HRQoL but is not associated with lower healthcare costs.” (Munford et al., 2017)

🌟 (caution: simple, before-after analysis on CLASSIC data)

🌟 What effect do we expect in two years?

🌟 Relative effects of service delivery interventions versus organisational changes?

“\textquote{I think the model that we’re putting in will help because it’s facilitating the services to work differently in specific areas. But the real efficiencies…so that’s a different way of working, but the efficiencies have to come through the integrated care organisation [ACO-type organisation], I believe}” (Salford interviewee)
Discussion with the panel and the audience

SELFIE Final conference, 13th of June
Column by Prof. (em) Jan de Maeseneer

• Director at the International Centre for Primary Health Care and Family Medicine – Ghent University

• Family Physician at the Community Health Centre WGC Botermarkt
Policy maker
Loukianos Gatzoulis
European Commission, DG Health and Food safety, Belgium

Provider/Entrepreneur
Helmut Hildebrandt
Optimedis AG, Germany

Policy maker
Juan Carlos Contel
Department of Health, Generalitat de Catalunya, Spain

Scientific researcher
Apostolos Tsiachristas
International Foundation of Integrated Care and University of Oxford, United Kingdom

Patient representative
Martin Rathfelder
Manchester Health & Care Commissioning, United Kingdom

Primary care physician, scientist (em.)
Jan de Maeseneer
Department of Family Medicine and Primary Health Care, University of Gent, Belgium
The future of integrated care: take home messages and policy recommendations

Reinhard Busse

SELFIE Final conference, 13th of June
A really full day...
My reflections ...

• Multi-morbidity is the most prevalent disease – a wonder why it has not received more attention for so long

• Multi-morbid people combine different needs – thus patient-centred, “integrated” and high performing care for them should therefore be seen as a litmus test for health systems

• Think globally (and be aware of frameworks and international evidence), but act locally (i.e. implement integrated care in a context-sensitive and target group-specific way)
The litmus test: bundled payments for single diseases do not work for multimorbid patients – maybe they should be abandoned altogether?
Acknowledge that realities may be different.
Realise that each has another – but complementary – task.

**Macro:** ensure privacy and data protection legislation with regard to information sharing and information on navigating the care and social system.

**Micro:** multidisciplinary team that crosses the healthcare, social care, and volunteer work boundaries, one contact person, not too many different carers, care coordinator.
But there are more target groups ... and all have their role(s), often jointly

- Policy maker
- Payer
- Provider
- Professional
- Partner
- Patient

- Start-up funding
- Long-term contracts
  - Collaborative governance involving payers
  - Payment models incentivizing integration

Leadership was distributed across different levels: national, regional, organisational and unit level.

Examples:
- Elected management board of programme
- Local champions within teams
... while often having different priorities
So what about the future?

• SELFIE 2020 was a good start, producing and providing lots of evidence

• Necessary to make different groups in various countries aware of it (but we know that dissemination is not enough) …
Transferability guidance, step 1: Could this model be started in my country?

Identify the reported barriers of implementation from the literature.

Survey local stakeholders about relative importance of barriers, and focus on the critical ones.

Organize a local multi-stakeholder workshop
- to discuss potential solutions for the critical barriers,
- to conclude on the feasibility of local implementation.

Publish your conclusions and rationale for knowledge sharing with other CEE countries / programs.
So what about the future?

• SELFIE 2020 was a good start, producing and providing lots of evidence
• Necessary to make different groups in various countries aware of it (but we know that dissemination is not enough) ...
• and find cross-group consensus of priorities, policies, models and implementation modes
• Discuss implications for other population/patient groups!