

Heart Failure Coach



Disclosures

- Unrestricted research grants
 - Roche Diagnostics
 - Novartis
 - Vifor
 - Cardiola
- Advisory Boards
 - Novartis
 - Roche Diagnostics
 - Servier
- Collaboration in EU project
 - Sananet
 - Neurogames
 - Exploris
- Participation in multicentre trials
 - Boehringer Ingelheim
 - Novartis
 - Actelion
 - Roche Diagnostics
 - Critical Diagnostics

Value Based Health Care Heart Failure

Remote Care – Telemedicine

- >10 years experience MUMC+
- **Health Buddy[®]**
 - later converted to online version: Sananet online
 - TEHAF study: Boyne et al. Eur J Heart Fail 2012; 14: 791
 - Tele-education and monitoring symptoms heart failure
 - Reduction in hospitalisation rate

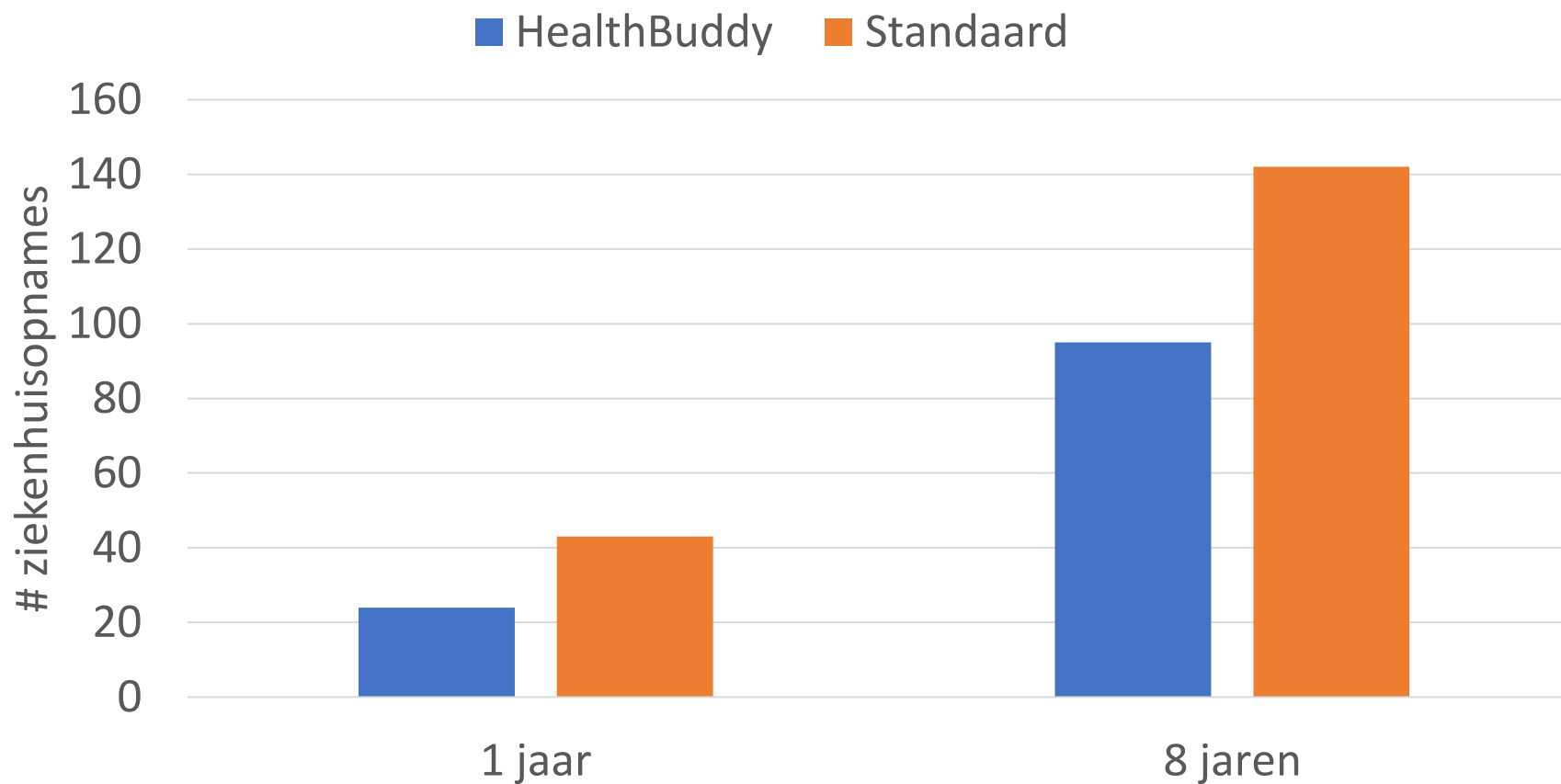


Boyne et al 2012
Gingele et al 2017

Effects after 1 and 8 years follow-up

1 jaar follow-up

8 jaar follow-up

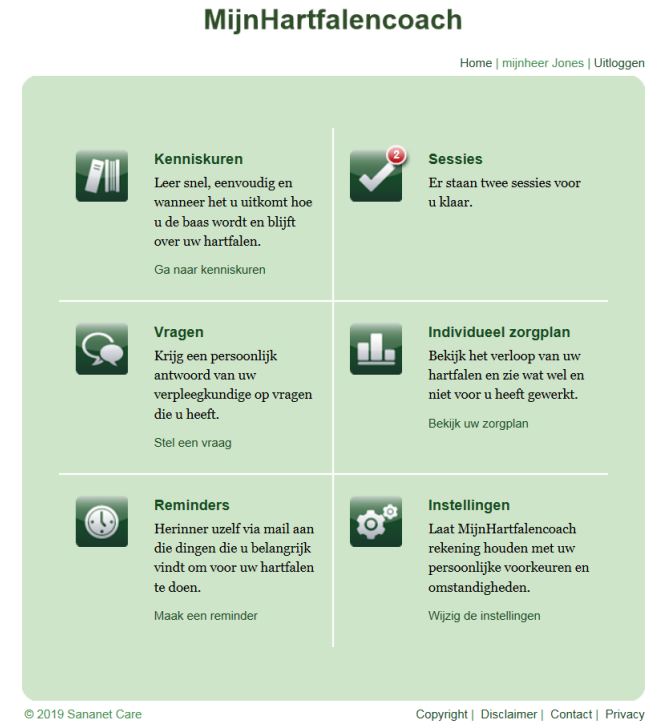


Evolution of the heart failure coach

- Further developped to HF coach

'Mijn Hartfalen Coach'

- Currently 250 HF patients MUMC



MijnHartfalenCoach


- ‘Smart’ system to monitor patients
 - Symptoms & signs of heart failure
 - Frequency adjusted to patients needs
 - HF nurse is alerted only if actions is required
 - Education modules
 - Adjusted to patients’ wishes and knowledge
 - Quick scan in case of uncertainty / deterioration


Telemedicine studies in NL in patients with HF

Study	Design	N	FU in months	Intervention	Primary endpoint	Outcome
TEN-HMS study (2005)	RCT	426	14–15	TM:	TM vs. NTS:	negative
	3 arms:			electronic monitoring of weight; blood pressure; single lead ECG	days lost because of death or hospitalisation	(difference –4 days; CI –15–6)
	UC; TM; NTS			NTS: (nursing telephone support)	TM, NTS vs. UC:	positive
					days lost because of death or hospitalisation	(difference 6 days; 95% CI 1–11)
TEHAF (2010)	RCT	382	12	Health Buddy:	Time to first hospitalisation	negative
	2 arms:			Monitoring signs & symptoms; Education; Support of self-care		(HR 0.65; 95% CI 0.35–1.17; <i>p</i> = 0.151)
	UC; TM					
IN TOUCH (2016)	RCT	177	9	innovative ICT-guided-disease management support combined with TM	composite endpoint of mortality, HF readmission and change in health-related quality of life	negative
	2 arms:			electronic monitoring of weight; blood pressure; ECG (used in case of start-up or up-titration of beta-blockers)		(Mean difference 0.1; 95% CI –0.67–0.82; <i>p</i> = 0.39)
	innovative ICT-guided support; Innovative ICT-guided support + TM					
e-Vita (2018)	RCT	450	12	heart Failure Matters website	self-care	negative
	3 arms:			care pathway on e-vita platform		HFM vs. UC mean 72.1 vs. 72.7, and EACP vs. UC 76.1 vs. 72.7, respectively (overall <i>p</i> = 0.184)
	UC; UC + HFM website; care pathway + link to HFM website					
Hart Motief Study (2015)	pre-post design	102	12	Motiva telehealth system: providing educational material, reminders of medication and motivational messages	no. of HF-hospitalisations	positive
						(rate ratio 4.1; 95% CI 2.8–6.3; <i>p</i> < 0.001)

'Next generation': HF coach combined with 'Molly'



 gebruikersnaam

 wachtwoord

[Wachtwoord vergeten?](#)

Inloggen

Nog geen lid? [Inschrijven](#)



Hoe gaat het op dit moment met u?

- | | |
|----------|---|
| Goed | > |
| Redelijk | > |
| Matig | > |
| Slecht | > |

←
Vorige

↺
Herhaal

||
Pauze

➦
Uitgang



Druk a.u.b. met uw voet op de weegschaal om te verbinden.



←
Vorige

↺
Herhaal

||
Pauze

➦
Uitgang



Pilot Trial to Introduce “Molly” in Clinical HF Care

- Education and instructions spoken
- Patient input via touchscreen (iPhone / iPad)
- Bluetooth connection
 - automated blood pressure
 - weight measurements
 - initial problems (4 drop-outs) → solved
- 3 months pilot:
 - initially recommended daily
 - after first month frequency adjusted to individual needs / symptoms
 - Quick scans additionally if needed

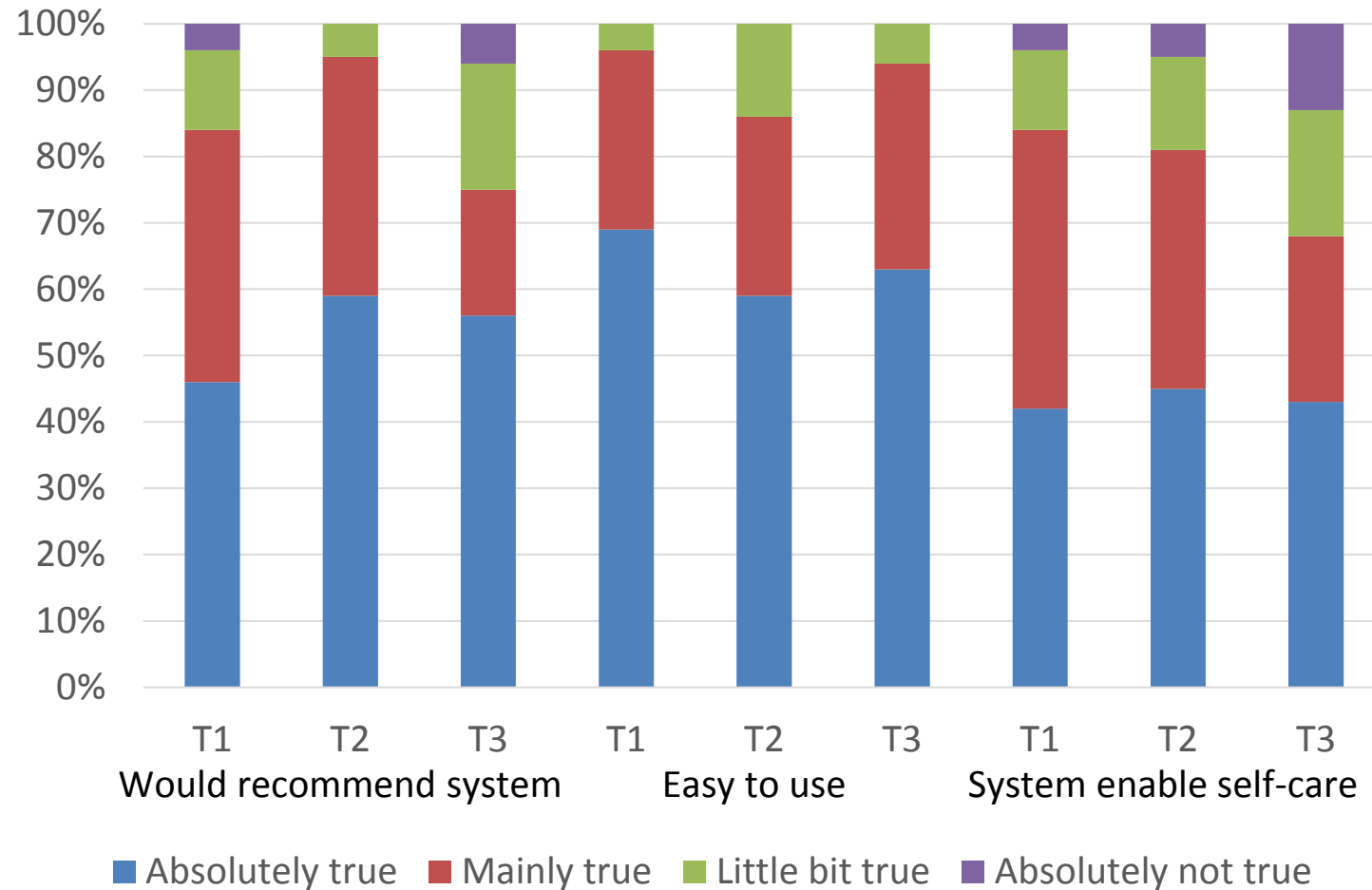
Boyne et al accepted

Pilot Trial to Introduce “Molly” in Clinical HF Care

- 30 patients with HF (age 47-87y, mean 63):
 - 10 new users
 - 10 switched from current system
 - 10 previous users that stopped
- Still some ICT knowledge by patients required (4 pts incapable), drop-outs mainly new users

Boyne et al accepted

Results Pilot Molly 1.0



- High medication adherence
 - MMAS-8 = 7.6 [max 8]
- High patients' satisfaction
 - Average 8 out of 10
 - Exeption Bluetooth connection 6.5 out of 10

Boyne et al accepted

Conclusions Pilot Molly 1.0

- Combination of nurse avatar and heart failure coach has high potential
 - for monitoring and educating heart failure patients and
 - to enable them to increase self-care
- Some further development needed for broad implementation
 - Extension of coaching modules
 - Update of platform

Short term development MUMC+

- To achieve fully functional version ready for broad implementation in clinical HF care
 - Updated version will replace HF coach
 - Implementation as part of the clinical processes in HF
 - Outpatient contacts↓, quality of life↑, hospital admissions↓
 - Implementation in other centres in NL
 - Scientific evaluation of implementation and effects by MUMC
 - Reimbursement by insurance companies in NL
- Adding more sensors
- Voice recognition

Implementation of 'Molly' in clinical care

What are the consequences?

Patients

- Take responsibility
- Better understanding of disease
- Better monitoring
- More controls, but less by healthcare professionals
- Alert on time



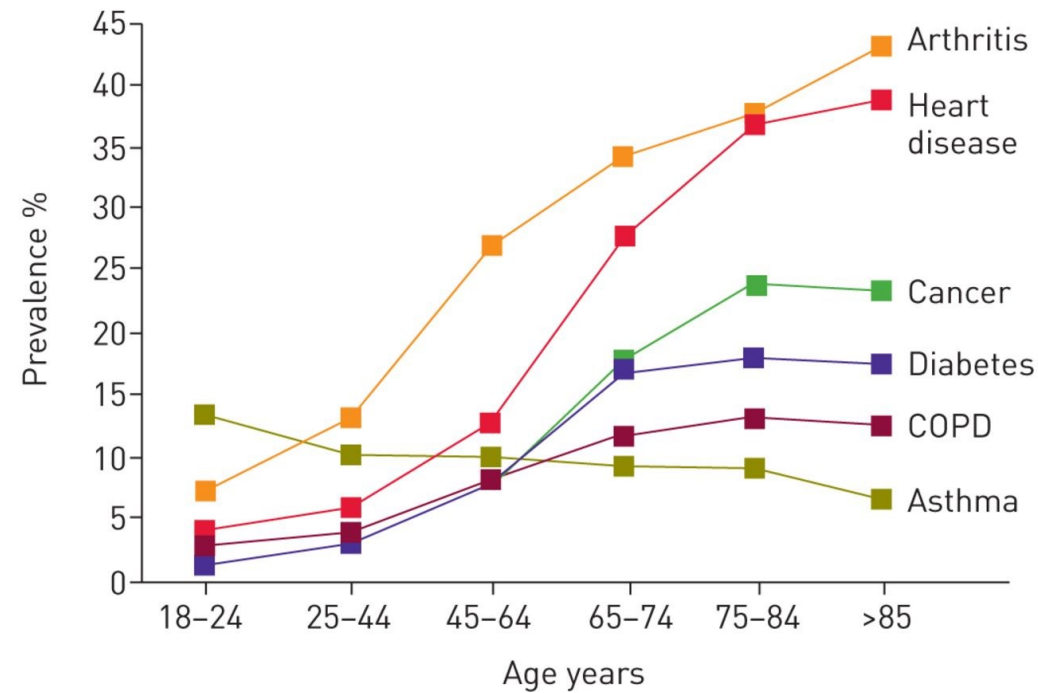
Healthcare professionals

- Let go...
- Support of discharge to primary care
- Less controls in stable patients
- Reduction of consultations, but
- More complex patients

Acceptance remains challenging

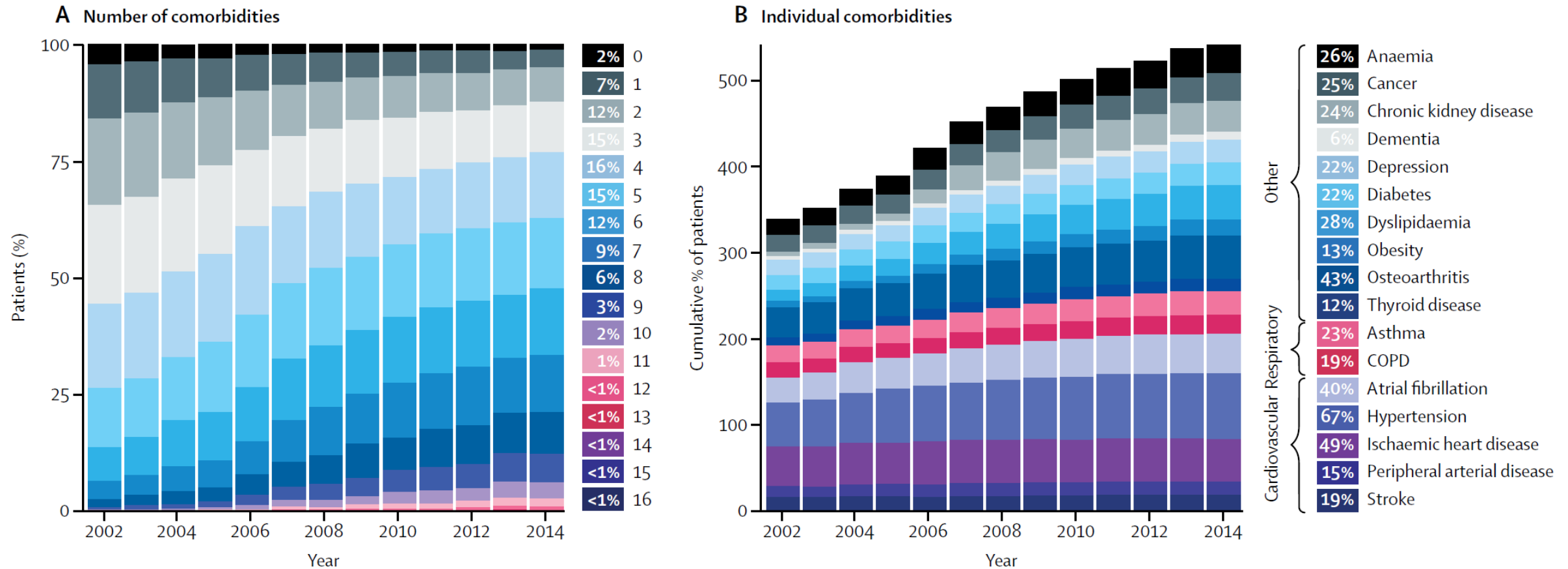
Threats and challenges in healthcare

- Chronic diseases are increasing...



- Heart failure 1-2% of whole population ($>10\% \geq 75$ years), in EU increase to 3% in 2025 ($\approx 20.000.000$ patients with heart failure)

Number of co-morbidities in heart failure



Threats and challenges in healthcare

- Increase in chronic diseases
 - Not only heart failure, but also other chronic diseases
 - Prevention important, but not the solution (later but not never...)
 - Many patients with multiple chronic diseases (co-morbidities)
- Costs are exponentially increasing (5-10% per year)
- Less care professionals in the future, particularly in remote areas or expensive cities
- Not sustainable without reduction in quality of care

How to solve this problem?

- Aim: **accessible and affordable top-level care** for all patients with chronic diseases
- What is already happening?
 - Shift of care
 - Conce
 - Uniform
 - Prevention of chronic diseases
- However, these measures will not be sufficient
- New vision care is urgently required
- How?

**The patients have to do
it by themselves!**






Consumentenbond: Zelfzorg tot 3x goedkoper dan doktersrecept

In de Gezondgids van juni maakte de Consumentenbond een vergelijking tussen de kosten van een recept dat de huisarts voorschrijft en een vergelijkbaar zelfzorgmiddel. 'Receptgeneesmiddelen worden vergoed, dus dan heeft mijn patiënt geen kosten', is de gedachte van veel huisartsen en de patiënt zelf. Maar de consument betaalt recept-

medicijnen vaak uit eigen zak, door het hoge eigen risico. In de praktijk zijn de maatschappelijke kosten zelfs nog hoger vanwege de prijs van een huisartsconsult en de administratiekosten voor de afhandeling door de verzekeraar. Het is de taak van de huisarts om waar mogelijk geen recept voor te schrijven maar te wijzen op een zelfzorgalternatief.



Rekenvoorbeeld Huidschimmel		
	RECEPTMIDDELIJN Prijs per tube zalf 30g* € 17,58	ZELFZORGMIJDELIJN Prijs per tube zalf 30g € 5,50
		Besparing € 12,08
Rekenvoorbeeld Hooikoorts		
	RECEPTMIDDELIJN Prijs per medicijn* € 12,82	ZELFZORGMIJDELIJN Prijs per medicijn € 7,00
		Besparing € 5,82
Rekenvoorbeeld Hoesten		
	RECEPTMIDDELIJN Prijs per medicijn* € 14,39	ZELFZORGMIJDELIJN Prijs per hoestdrank € 5,50
		Besparing € 8,89

Consumenten eigen risico 2014 € 360,-

50% van de consumenten
maakt het eigen risico niet op Bron: VWS

*Inclusief maximumtarieven apotheekkosten: € 6,- normale uitgifte receptgeneesmiddelen, € 6,- toeslag eerste uitgifte.
De infographics zijn gebaseerd op cijfers en informatie van de Consumentenbond.

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Patient selfcare using eHealth in chronic Heart Failure

Self-care of patients

Initiative with avatar/patient

Self monitoring / diagnostics

Self treatment-plan

Self prescription

Substitution of outpatient
care



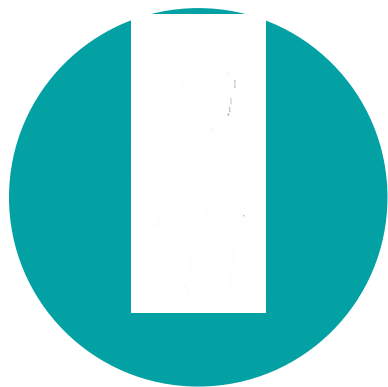


Study plan

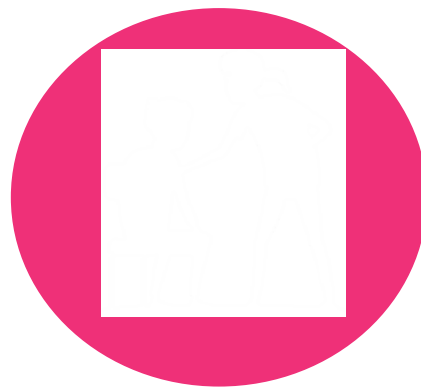


2018/19

Defining requirements



Patient



Caregiver



Physicians



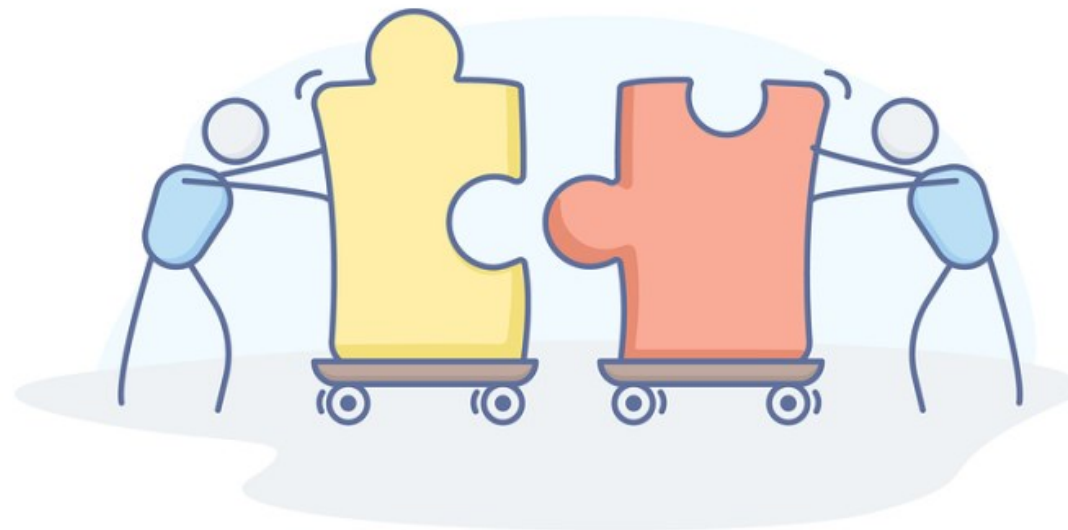
Step 1: definition of requirements

- Interviews with stakeholders: patients, relatives, care professionals, others such insurers, authorities, industry
- Analysis of guidelines (not only heart failure)
- Definition of parameters that need to be collected



2019/20

Development



Technical partners



Step 2: development of application

- eHealth platform: further development of “Molly” and possibly other applications
- Platform for exchange of (medical) data
- Use needs to be interesting for patients and collection of additional diagnostics (Serious gaming)
- Self-learning algorithms (artificial intelligence) → medical advice directly to patients

Step 3: clinical implementation and testing

- Use in daily practice in 4 countries
- Physicians supervise “app” and teach it to increase level of knowledge
 - If “app” has no solution, patients get advice to contact healthcare professional
 - Complexity of decisions will increase over time
- Aim: 100% medically reasonable decisions after testing phase; reduction of >70% of outpatient controls

1

Working
avatar



2

100%
safe



3

>70% of
care



Goals

What are “we” going to do then?

- Number of patients with chronic diseases will further increase...
 - Transition of care from inpatient to outpatient / home
- Focus on real complex patients – in- and outpatient treatment / management
- For patients, medical knowledge is only part of care
 - E.g. psychosocial aspects
- Supervision and further development of ‘Molly’ / ‘Abby’...
- Contribution to further development of care