

BENEFITS, COSTS AND COST EFFECTIVENESS OF A CHRONIC HEART FAILURE DISEASE MANAGEMENT PROGRAM FOR AUSTRIA

– A DECISION-ANALYTIC MODELING STUDY

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Introduction

Heart failure is affecting at least 26 million people worldwide. Disease-management programs (DMP) for patients with chronic heart failure (CHF) can reduce hospital readmission, morbidity, and mortality. Our study commissioned by the Austrian Competence Centre Integrated Care (CCIV) aims to evaluate benefits, costs, and cost effectiveness of DMP-CHF interventions for patients with diagnosed CHF in Austria.

Methods

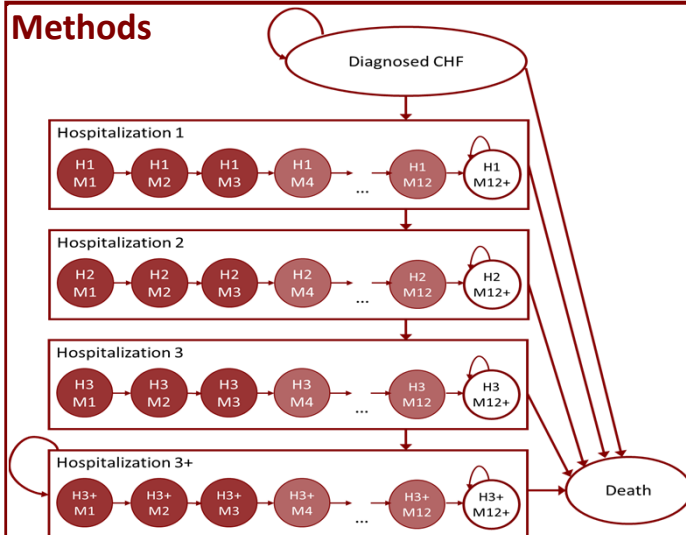


Figure 1. Bubble diagram, model structure

H – hospitalization, M – month, CHF – chronic heart failure, DMP – disease management program; Sources: Klersey 2011, Thokala 2013, Göhler 2008, Statistics Austria 2016, CCIV DMP CHI Framework 2022, Austrian cost data

Figure 2. Examined strategies

	Inclusion	Duration	Design
Usual Care - UC	-	ongoing	not specified
DMP - TM 3M	1 st	3 months	TM Telemedicine
DMP - HV 12M	1 st	12 months	HV Home visits
DMP - TM_HV LL	Diagn.	Lifelong	Diary OR 30% OR 45%

Modeling Framework

- **Target population:** Patients diagnosed with CHF with an average age of 69 years
- **Strategies:** Usual Care – UC, DMP - TM 3M, DMP - HV 12M, DMP - TM_HV LL (Fig 2.)
- **Perspective:** Healthcare system
- **Analysis:** Cost-effectiveness analysis, cost-utility analysis, **Sensitivity analyses**
- **Time horizon:** Remaining lifetime
- **Health states:** see Fig 1.
- **Endpoints:** Life expectancy, quality-adjusted life years [QALY], hospitalizations, total costs, incremental cost-effectiveness ratio (ICER)
- **Model type:** State-transition model (Markov model), discount rate: 3%

Results

Table 1. Health outcomes (effectiveness) fact box (1,000 patients)

Treatment Strategies:	DMP – HV	DMP – TM	DMP – TM_HV
Incremental Outcome (vs. UC)	12M vs. UC	3M vs. UC	LL vs. UC
Life-Years Gained	323	670	1.058
Quality-Adjusted Life Years Gained	257	534	851
Additional Hospitalizations	26	26	37

DMP – HV 12M 12-months program with home visits

DMP – TM 3M 3-months tele-medicine program

DMP – TM_HV LL life-long program with tele-medicine and home-visit options, UC – usual

care, DMP – disease management program, UC – usual care

Assuming a cohort of 1,000 people diagnosed with chronic heart failure with an average age of 69 years.

Sensitivity analyses

- DMP-TM 3M dominated, DMP-TM_HV LL only non-dominated strategy: @ 20% reduction in DMP physician costs, only three annual home visits, Telemonitoring more than 50% in the DMP-TM_HV LL, relative reduction in hospitalization risk of less than 26% through telemonitoring
- If strategy with home visits achieves relative reduction in hospitalization risk of more than 24%, it becomes a preferred strategy

Discussion / Limitations

- Probability hospitalization, CHF-related mortality in Markov state of diagnosed HF from studies with patients with/ without index hospitalization
- DMPs designed with patient diaries or home visits equally efficient, but with a difference in costs
- Assumption - full and continuous willingness to participate

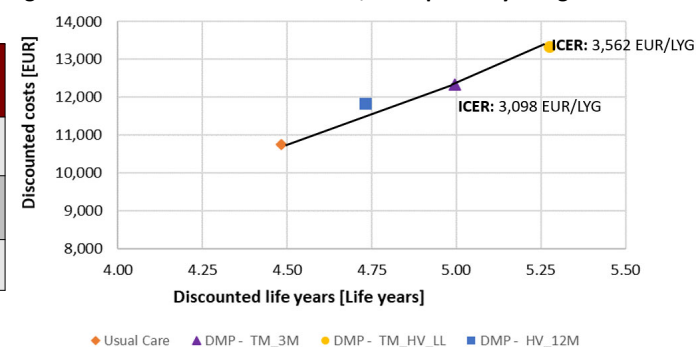
Conclusion

In comparison with UC, all three alternative DMPs are effective. DMP - TM_HV LL provides the highest gain in life years and quality-adjusted life years. DMP - TM 3M can be considered cost effective compared to UC. DMP - TM_HV LL is also cost effective compared to the DMP - TM 3M ICER < 5,000 EUR/QALY.

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Figure 3. Health economic outcomes, costs per life-years gained



DMP – disease management programme, EUR – euro, HV – home visits, ICER – incremental cost-effectiveness ratio, LL – life-long, M – month, TM – tele-medicine program, LYG – life years gained

Figure 4. Health economic outcomes, costs per – quality-adjusted life years

