

# From guideline to daily practice: Implementation of ESC-guidelines considering multidisciplinary and non-pharmacological care in heart failure in three ESC member states, a case study

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## Abstract

**Introduction:** To alleviate the burden of Heart Failure (HF), the European Society of cardiology developed guidelines (ESC-guidelines) to optimise HF-diagnosis and treatment. These guidelines state that optimal HF-care is organised in a multidisciplinary programme in which pharmacological and non-pharmacological treatment is offered. Research has proven that multidisciplinary programmes and effective self-care behaviour significantly reduce HF-mortality and (re)hospitalisation, yet little is known about implementation of these ESC-guidelines. Therefore, the INTERACT study investigated current HF-care processes and guideline adherence in three North-West European regions: Maastricht (the Netherlands), Aachen (Germany) and Noorder-Kempen (Belgium).

**Methods:** A case-study approach was adopted to study local implementation of ESC-guidelines considering non-pharmacological- and multidisciplinary care. National guidelines and local protocols were collected and studied to investigate the level of agreement with and implementation of ESC-guidelines. A matrix was developed to analyse the content of national and local guidelines and protocols in terms of non-pharmacological and multidisciplinary care.

**Results:** All national organisations promote ESC guidelines, and some developed additional national guidelines. In region A, B and C patients receive multidisciplinary care in hospital based HF-outpatient clinics. Moreover, region B and C patients benefit from either structural (region B) or project based (region C) integrated care, in which specialist- and primary care work together to provide seamless care for HF-patients. However, in region A this seamless integrated care remains to be implemented.

**Conclusion:** Although ESC-guidelines recommend clearly considering Multidisciplinary- and non-pharmacological care implementation may differ between regions.

## Keywords

Guidelines, heart failure, non-pharmacological care, disease management

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## Introduction

Heart Failure (HF) is a chronic and complex disease with poor prognosis and high socio-economic impact.<sup>1</sup> To alleviate HF burden, the European Society of Cardiology (ESC) developed guidelines to optimise diagnosis and treatment of acute and chronic HF.<sup>2</sup> These guidelines state that optimal HF-care should be organised in a multidisciplinary programme (MDisc-programme) and should contain a combination of both pharmacological and non-pharmacological treatment in terms of patient-education to promote self-care.<sup>2</sup>

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It has been proven that MDisc-programmes lead to an increase of evidence-based therapies.<sup>3</sup> Effective MDisc-programmes consist of a number of critical elements such as a well-trained seamlessly interacting multidisciplinary team<sup>2,4</sup> with low-threshold accessibility, the presence of HF-outpatient clinics, and guideline adherence.<sup>2,5,6</sup> Seamless HF-care throughout all levels of care is of utmost importance to tackle the challenges that HF imposes on patients, their caregivers and healthcare.<sup>2,6</sup>

**Table 1.** HF-guidelines in the Netherlands, Belgium and Germany in relation to their importance.

Guidelines			
	Belgium	the Netherlands	Germany
Cardiologist	ESC guidelines (2016)	ESC 2016 guidelines National Transmural Protocols (LTA) (2015) Multidisciplinary Guideline Heart Failure (2010) NHG-standard Heart Failure (2010)	ESC guidelines (2016) ESC Pocket Guidelines (2016)
GP's	Guidelines Domus Medica/SSMG (2010) ESC guidelines (2016)	NHG-standard Heart Failure (2010) National Transmural Protocols (LTA) (2015) ESC guidelines (2016)	ESC Pocket Guidelines (2016) National Health Care guideline Chronic Heart Failure (2019) ESC guidelines (2016)
HFN	ESC guidelines (2016)	National Transmural Protocols (LTA) (2015) ESC guidelines (2016) Multidisciplinary Guideline Heart Failure (2010) NHG-standard Heart Failure (2010)	ESC guidelines (2016)

Guidelines are presented in order of their importance for each particular profession meaning the first guideline is mostly used, the second less and the third even more less. NHG-standard: Nederlandse Huisartsen Genootschap Standaard.

Within ESC-guidelines, MDisc-management programmes receive a Class IA recommendation, meaning that there is ample evidence that these programmes have a significant impact on clinical outcome.<sup>2</sup> Moreover according to these guidelines, successful MDisc-management programmes are designed to improve outcomes through structured follow-up with patient education, optimizing medication, psychosocial support and improved access to care.<sup>2</sup> Furthermore, an overview of characteristics and components of MDisc-management programmes is provided.<sup>2</sup>

Self-care support and education are considered key components of these MDisc-programmes.<sup>2</sup> Effective self-care leads to a decrease in mortality, rehospitalisation, symptom burden and distress, and an increased quality of life (QoL).<sup>7-9</sup> In fact, effective self-care may be as beneficial as pharmacological therapy.<sup>7</sup>

Therefore, ESC-guidelines formulate 12 key topics and self-care skills that patient education should include, but little is known about national and local implementation of these recommendations. Therefore, the Improving kNowledge Transfer to Efficaciously Raise the level of Contemporary Treatment in Heart Failure study (INTERACT-in-HF study) investigated current processes of HF-care and guideline adherence in three North-West European regions in the Netherlands, Belgium and Germany.<sup>1</sup>

## Methods

The purpose of this study was to obtain an in-depth understanding of the implementation of ESC guidelines regarding MDisc-care and non-pharmacological therapy in HF-patients within the three INTERACT-regions. To do so, a case-study approach as method to explore, analyse and understand important issues related to this implementation was adopted.<sup>10,11</sup> In total six cases were selected. Each selected case had a close relation with the INTERACT-in-HF study.

Therefore, data was collected in two consecutive phases:

Firstly, representatives of national medical and nursing cardiovascular associations were consulted via e-mail to inquire about national HF-guidelines in terms of MDisc-care, patient education and self-care support.

Secondly, to study local implementation of ESC and/or national guidelines an internet search took place and researchers reached out to regional healthcare facilities and to HF-care professionals via e-mail. These professionals were asked to provide information and/or documents considering the organisation of HF-care in their organisation. The acquired documents were studied by two researchers (KB and JB) and screened for keywords and topics related to MDisc- and integrated care and non-pharmacological care.

Consecutively, to verify online information researchers consulted project managers or staff members. If written

care-protocols in terms of (non-pharmacological) HF-care were lacking this was discussed with local HF-specialists. These interviews took place in September 2020. Furthermore, an short interview guide was developed to discuss the organisation of non-pharmacological care.

To analyse the content of all documents and interviews into detail, a matrix was developed. This matrix represents all MDisc- and non-pharmacological care topics explicitly addressed in the various investigated national documents or mentioned by local HF-specialists during their interview.

The INTERACT-study was approved by the Ethics committees of Maastricht University Medical Centre (reference number: 124074) of the University Medical Centre of Antwerp (reference number: UC UZA 14/6/54) and the University of Aachen (reference number: EK023/13) and complies with the Declaration of Helsinki.

## Results

### *National guidelines*

The search for national guidelines revealed that national cardiovascular organisations, national organisations for primary care physicians and national organisations of cardiovascular nurses promote ESC guidelines to their members. Additionally, as shown in Table 1, several organisations provide their members with national guidelines based on either ESC 2016, ESC 2012 or ESC 2008 guidelines.

The content of these guidelines in terms of MDisc-care and patient education is summarized in Table 2 showing differences between different guidelines and as compared with the ESC guidelines.

### *MDisc-care and non-pharmacological care in The Netherlands.*

All national HF-guidelines in the Netherlands provide a framework for MDisc-cooperation based on the characteristics and components of MDisc-programmes as defined in ESC guidelines. Furthermore, they discuss several key topics for patient education and self-care support described in ESC guidelines. However, education concerning implanted devices is not discussed and other topics such as sleep and sexual activity are discussed in one or two national guidelines. Moreover, one national guideline discusses driving and pregnancy, both of which are no topics in the ESC-guidelines (Table 2).

*MDisc-care and non-pharmacological care in Belgium.* The Belgian organisation for primary care physicians has developed CHF-guidelines, in which the effectiveness of MDisc-programmes, the role of GP's in terms of HF and several of the key topics for patient-education and self-care support are discussed. Yet, these guidelines do not include topics concerning definition and aetiology of HF, symptom monitoring, implanted devices, travel and sleep (Table 2).

Moreover, no disease management programme for HF (DMP-HF) is yet in place in Belgium.<sup>12-14</sup> Discussion with Belgian HF-professionals revealed that since September 2019 a learning HealthCare NetworkHF has been established to facilitate implementation of multidisciplinary and transmural HF-care in Belgium.<sup>15</sup>

*MDisc-care and non-pharmacological care in Germany.* Both guidelines of the German Cardiovascular association and the German association for primary care physicians discuss MDisc-care and patient education in terms of lifestyle adjustments and self-care support. The guidelines of the German Cardiovascular association summarizes ESC-recommendation. The guidelines of the German Association of Primary Care Physicians discuss MDisc-care in terms of revalidation, and most topics that should be included in patient education. Topics concerning definition and aetiology of HF, travel and sleep are not included (Table 2).

Moreover, the German Cardiovascular association has, together with the German association for thoracic and cardiovascular surgery and the German association of cardiologists in private practise, developed quality criteria for integrated care, in which three levels of HF-care are defined. For each level the criteria for accreditation in terms of facilities, equipment and staffing are determined. All accredited organisations in one region form a regional integrated HF care network.<sup>16</sup>

Additionally, German HF-professionals informed the principal investigator that in 2018, the German Government approved a national disease management programme (DMP) Heart Failure (DMP-HF) in which patients receive specialist- and MDisc-care and patient education. However, this DMP-HF has yet to be implemented.

### *Local implementation of guidelines*

*Region A.* In region A, one hospital has been accredited as an interregional specialized HF-centre, meaning that it offers high level specialist and MDisc-care to HF-patients. An interview with a local HF-professional revealed that within the HF-outpatient clinic follow-up is provided by cardiologists and HFN. At the moment, no written protocol considering non-pharmacological treatment is agreed upon. However, cardiologists educate patients considering fluid, weight and salt-intake. If necessary, patients receive support in their pharmacological therapy adherence by HFN (Table 3). Since other healthcare facilities in the region have yet to be accredited as HF-centre, structural integrated care as described in the integrated care path is not yet part of HF-care in the entire region. Communication and exchange information considering patient cases takes place in direct contacts between GP's and cardiologists.

*Region B.* In region B, a working group consisting of representatives of the HF-team and of primary care caregivers

**Table 2.** Content of national guidelines in terms of mDisc- and non-pharmacological care.

	the Netherlands				Belgium Chronic HF by Domus Medica	Germany	
	ESC HF-guidelines	National Trans-mural Proto-cols	Multi-disci- plinary Guideline HF	NHG standard HF		ESC pocket guidelines	National Health Care Guideline Chronic HF
<b>Multidisciplinary HF-care</b>	X	X	X	X	X	X	X
<b>Topics of patient education and self-care support</b>							
Definition, aetiology and trajectory of HF (including prognosis)	X	X	X				
Symptom monitoring and self-care	X	X	X			X	X
Pharmacological treatment	X	X	X	X	X	X	X
Implanted devices	X						X
Immunization	X		X	X	X		X
Fluid intake	X	X	X	X			X
Body weight	X	X	X	X	X		X
Healthy eating	X		X	X		X	X
Salt intake	X	X	X	X	X		X
Alcohol	X		X	X	X		X
Smoking and recreational substance use	X		X	X	X	X	X
Exercise	X	X	X	X	X	X	X
Travel and leisure	X		X	X			
Sleep and breathing	X		X				
Sexual activity	X		X		X		X
Psychosocial aspects	X	X	X		X	X	X
Driving			X	X			
Pregnancy			X				

X: this topic is discussed in the corresponding guideline.

developed the protocol about HF-treatment and collaboration. Within this protocol it is agreed that specialised care professionals treat newly diagnosed, unstable and high complex patients. Chronic, stable HF-patients are monitored by their GP and practise nurse, whereas both are able to seamlessly consult the HFN or cardiologist in case of problems. Allocation to the most appropriate professional occurs by means of a self-developed instrument. All investigated local protocols focus on ESC-guidelines considering patient education and self-care support (Table 3).

**Region C.** In region C, an in-hospital HF-programme both for patients who are admitted with HF as for outpatients has been set up. Within this programme, MDisc-care is provided by cardiologists and HFN in collaboration with other specialist disciplines involved in HF-care. Furthermore, an integrated care project for HF-patients has been established. This project is a partnership between the hospital based MDisc-programme

and primary care. After HF-hospitalisation participating patients receive a follow-up home visit by a primary care nurse HF-manager. The latter also coordinates primary care for HF-patients and supports them with their self-care. Within the project, no formal education manual exists yet. However, the European Heart Failure Self-care Behaviour scale-9 is used as a topic list<sup>17</sup> Additionally, medication i.e. adherence and self-medication, and wellbeing is assessed. Education is tailored according to the individual needs and questions of patients and their informal caregiver. Afterwards, a report is send to the primary care physician. Table 3 provides an overview of the topics discussed during these sessions.

## Discussion

This study shows that ESC guidelines are widely adopted by national medical and nursing cardiovascular

**Table 3.** Local guideline implementation in the different regions.

	Region B		Region C		
	Region A outpatient clinic	outpatient clinic	integrated care	outpatient clinic	integrated care
<b>Multidisciplinary HF-care</b>	X	X	X	X	X
<b>Topics of patient education and self-care support</b>					
Definition and aetiology including prognosis		X	X	X	X
Symptom monitoring and self-care		X	X	X	X
Pharmacological treatment/ therapy adherence	X	X	X	X	X
Implanted devices				X	
Immunization		X	X	X	
Diet and alcohol	X	X	X	X	X
- Weighing	X	X	X	X	X
- Salt intake		X	X	X	X
- Fluid intake		X	X	X	X
- Alcohol		X	X	X	
- Healthy eating				X	
Smoking		X	X	X	X
Exercise		X	X	X	X
Travel and leisure		X	X	X	
Sleep		X	X		
Sexual activity			X	X	
Psychosocial aspects		X	X	X	X
Management of comorbidities		X	X		
Follow Up			X		X
Revalidation		X		X	

X: this aspect of multidisciplinary care discussed in ESC-guidelines is regionally addressed.

associations, and that most of them either adopt or translate these guidelines into national guidelines. Yet, the level of implementation of ESC-Guidelines in terms of MDisc-care and patient education differ among the investigated nations and regions.

On national level in Belgium, a general strategy for chronic diseases was adopted. However, experts deem this strategy too generic to have a significant impact on HF-care.<sup>12</sup> Moreover, the Belgian Board of cardiovascular Pathology recommends MDisc-programmes for HF as a collaboration between a cardiologists with special interest in HF and a HFN who provides education and follow-up.<sup>13</sup> These programmes are not yet broadly implemented and no national DMP for HF exists in Belgium yet.<sup>13,14</sup> Moreover, the Belgian government does not recognise HF-specialist, nor provides reimbursement of HF-education or determining NT-pro-BNP.<sup>12</sup> This may, in part, explain that only a minority of Belgian hospitals developed a MDisc-programme for HF.<sup>13</sup>

Nevertheless, following the need for more integrated and MDisc-care, integrated care projects are currently being implemented throughout the country. Within each of these projects, hospital based specialist care cooperates

with primary care. Unfortunately, no information was exchanged between the projects, which means that they all encountered the same problems without being able to learn from each other. To unite these different integrated care projects in the Flemish region in Belgium and work together towards a better HF-care, a learning HealthCare Network HF was established.<sup>18</sup> This network unites eight different regional integrated HF-projects in the Flemish region in Belgium. It aims to create an accessible, open and dynamic network in which knowledge and data can be exchanged to improve HF-care.<sup>18</sup> Moreover, it aims to facilitate the implementation of an MDisc-programme for HF in primary care.<sup>18</sup> This guideline driven bottom-up approach shows the urgent need to improve HF-care and HF-outcomes, yet it still has to be evaluated and scaled up.

In Germany, national criteria for integrated HF-care have been developed by the German Association of Cardiology. Healthcare facilities can apply for accreditation as HF-centre to take part in the integrated care network. In the whole of Germany 158 accredited HF-centres are in place.<sup>19</sup> Moreover, a national DMP-HF has been developed. However, The German Federal office of Social Security assessed this DMP-HF and concluded the

education programme was not yet sufficiently evaluated and implemented in the outpatient setting.<sup>20,21</sup> Moreover, it also remains unclear what kind of professionals need to be involved in the DMP-HF, and how the responsibilities among the team members should be distributed.<sup>21</sup> The German association of Cardiology promotes physician directed care in which the physician a.o. educates patients in cooperation with specialised nurses, however, this is not according to ESC-guidelines and may limit the impact of patient education. Additionally within the DMP-HF, HFNs are not identified as key partners, which is in contrast to ESC-guidelines who identify HFN in addition to cardiologists and GP's as one of the primarily involved HF related care givers.<sup>2</sup>

All investigated DMP's, national guidelines and local protocols include patient-education and self-care support. Yet, it is noticed that none of them addresses all key topics defined by ESC-guidelines. Topics considering lifestyle adjustment, symptom monitoring and therapy adherence are widely implemented whereas topics such as sleep, travel and sexual activity are rarely included. Yet, these topics have a significant impact on the quality of life and the progression of HF, too.<sup>22,23</sup>

Patient education and self-care support are cornerstones of integrated care services, since both have the potential to improve patients' knowledge and self-care abilities.<sup>24</sup> Within region A and B, patient education is provided in the HF-outpatient setting by HFNs and in one by primary care nurses in the primary care setting. In addition, in both regions, protocols for comprehensive patient-education and self-care support are in place. In region C, in the HF-outpatient setting, patient education is provided by cardiologists. Only patients whose therapy adherence is lacking, receive additional education and support by HFNs. However, whereas HFN are specifically trained to educate and support patients, cardiologists receive little training on this topic, yet extensively on HF-treatment. This may, in part, explain the lack of local protocols on patient-education and self-care support and the limited patient education and self-care support reported by health-care professionals (Table 3).

Finally in one region, the DMP was established as project and not (yet) fully integrated in the standard of care process. The project based nature of integrated care projects may have additional challenges: first and foremost is that these projects are limited in time, thus scaling-up is very important but also very difficult for individual projects. Therefore, implementation plans beyond the project should be an integral part.

## Strengths and limitations

To our knowledge this is the first study that investigates regional implementation of ESC guidelines considering MDisc- and non-pharmacological care in terms of patient-

education and self-care support. As far as we are aware of, all national guidelines and local protocols concerning MDisc- and non-pharmacological treatment of HF have been included in this analysis. Yet, we cannot exclude that there may exist additional guidelines and particularly local protocols that are not included in this study. It is, however, unlikely they may provide other insights and therefore affect our conclusions.

This research focuses on three regions in three ESC-member states. Even within these countries, local and regional differences in HF-care are present but are not considered in this analysis. Also, significant differences between other ESC-member states not included in this study are likely, but not address so far. Therefore, it is recommendable to extend this research to other regions and countries to get broad insight into the implementation of the ESC-guidelines in Europe and the European 'real world' HF-care. The results of this study show the urgent need for this.

## Conclusion

This study shows that in all investigated nations national cardiovascular associations, national associations for primary care physicians and cardiovascular nurses endorse ESC-guidelines. However, structural barriers such as lack of a national strategy or of recognition of HF-professionals can hamper practical implementation of ESC-guidelines in general and in terms of patients education, SC-support and MDisc-care. However, in these countries and in the INTERACT-in-HF regions we have observed an increasing interest and commitment to implement multidisciplinary HF-care. This is shown by bottom-up initiatives leading to regional multidisciplinary HF-projects, national programmes and development of own quality criteria for HF-centres of expertise by national cardiovascular associations. Thus is it crucial that governments take on the challenges posed by HF and support the further scaling up and sustainability of these developments.

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**Supplemental material**

Supplemental material for this article is available online.

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