

## Chapter 71

# Contemporary Heart Failure Treatment Based on Improved Knowledge and Personalized Care of Comorbidities

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### ABSTRACT

*Chronic diseases are the leading cause of mortality and morbidity. A significant contribution to the burden of chronic diseases is the concurrence of co-morbidities. Heart failure (HF) is a complex, chronic medical condition frequently associated with co-morbidities. The current care approach for HF patients with co-morbidities is neither capable to deliver personalised care nor to halt the on-going increase of its socio-economic burden. Our approach aims to improve the complete care process for HF patients and related co-morbidities to improve outcome and quality of life. This will be achieved by the proposed standardised yet personalised patient-oriented ICT system that supports evidence-based clinical decision making as well as interaction and communication between all stakeholders with focus on the patients and their relatives to improve self-management. We propose that such a system should be build upon a novel European-wide data standard for clinical input and outcome and that it should facilitate decision making and outcome tracking by new collective intelligence algorithms.*

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## INTRODUCTION

Chronic diseases are by far the leading causes of mortality and morbidity in Europe and other Western countries (Busse, 2010). Together, heart disease, stroke, cancer, chronic respiratory diseases, diabetes mellitus and other chronic diseases represent a staggering 63% of all death causes worldwide. Prevalence of these diseases is rising due to changes in lifestyle, increasing healthcare standards and the ageing population. Besides major adverse effects on quality of life of patients, chronic diseases pose a serious economic burden for individual patients as well as for society as a whole. Economic implications for individual patients include depress of wages, workforce participation, increase in early retirement and high job turnover. For society a shocking 75% of all healthcare costs are comprised of costs related to chronic illnesses (Gemmill, 2008). The economic impact extends further beyond these healthcare costs (e.g. costs of productivity losses for employers).

A significant contribution to the burden of chronic diseases is the concurrence of multiple chronic diseases (co-morbidities). Co-morbidities are becoming increasingly frequent (Garcia-Olmos, 2012) and are present in one third of the adult population. The prevalence of co-morbidities rises greatly with age, reaching a prevalence of 60% among individuals aged 55-74 years and this percentage is even higher in older patients.

As chronic diseases can rarely be treated in isolation, medical professionals are not capable to take into account the many factors relevant for the outcome of the patient in the development of a care-plan. Furthermore classical clinical evidence fails to provide medical professionals with evidence to manage the care for the small patient populations as these are not included in the large clinical trials. Hence, providing patients suffering from co-morbidities with optimal care is a major challenge for the healthcare system.

### **Related Co-Morbidities to HF**

Risk factors for HF are overlapping with other chronic diseases and therefore patients with HF frequently have associated co-morbidities: a fundamental problem in HF. More than 40% of HF patients have 5 or more co-morbidities, often other chronic diseases, while almost none of the HF patients are free of any co-morbid condition<sup>11</sup>. Most HF patients have arterial hypertension (i.e. >80%<sup>12</sup>) and three quarters has ischemic heart disease (IHD). Cataracts are present in half of the patients<sup>11</sup>. 30-50% of HF patient has chronic kidney disease (CKD) while diabetes mellitus, chronic obstructive pulmonary disease (COPD), atrial fibrillation (AFIB) and arthritis are seen in 30–40% of HF patients. Furthermore, stroke, dementia, depression and osteoporosis are present in 20–25% of HF patients. These comorbidities along with frailty contribute to poor outcome of HF, especially in the elderly patients. The frequent presence of co-morbidities is alarming as it significantly complicates diagnosis, treatment and follow-up. The cumulative number of drugs for these patients increases the risk of interactions and adverse effects. Moreover, co-morbidities may interfere with treatment effects of HF medication<sup>13</sup> and most are associated independently with worse prognosis<sup>14</sup>. Hence, care for co-morbidities should be heavily emphasised in the whole care process, as illustrated by the following real-life example

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