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Editorial

Harnessing technology in heart failure care

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Heart failure (HF) is a major and growing public health problem worldwide and imposes a considerable burden on patients, families and healthcare systems (Savarese and Lund, 2017). In the UK, acute HF is the leading cause of hospital admissions in people aged 65 years or older (NICE, 2014), and as people live longer, HF hospitalisation rates are predicted to rise by greater than 50% over the next two decades (Ziaeian and Fonarow, 2016). HF is already one of the five most common causes of death worldwide and if current trends continue, it is predicted that by the year 2030, it will account for at least 8 million deaths (Diaz-Toro et al., 2015). The rising prevalence of HF and the consequent increase in healthcare resource use and expenditure (Farré et al, 2016) is not sustainable, and new and radical alternative approaches to the organization and delivery of HF care are urgently needed.

The COVID-19 pandemic has brought into sharp relief the need for new ways of delivering healthcare and, together with the recent explosion of interest in eHealth (Ski et al, 2021), has led to the increasingly widespread consideration and use of new technologies. For example, an estimated 500 million patients are utilising eHealth applications (apps) in supporting their own health through the self-care management of chronic diseases (Athilingam and Jenkins, 2020). HF care is ripe for such applications in helping patients in their ongoing self-care, symptom monitoring and treatment adherence, especially when patient visits to cardiology services, including HF clinics, have reduced by almost half during COVID-19 (Fersia et al, 2020), and been replaced by video and telephone consultations.

Technology innovation aims to drive down spending while maintaining high quality care (Gottlieb and Makower, 2013), and the NHS makes it clear that technology will play a central role in realizing its long-term plan (NHS England, 2019).

The recent surge of interest in eHealth in HF (Barrett et al, 2019; Cruz-Martinez et al, 2020; Dunn Lopez et al, 2021; Granja et al, 2018; Reiners et al, 2019) indicates that it can aid access and use of patient self-care management and education. However, users have varying degrees of technological ability and literacy (Dunn Lopez et al, 2021; Reiners et al, 2019) and

these need to be addressed to ensure personalised use (Granja et al, 2018; Reiners et al, 2019).

Although HF-related outcomes vary, eHealth can improve quality of life and other patient outcomes such as symptom monitoring and engaging in and managing self-care (Athilingam and Jenkins, 2018; Barrett et al, 2019; Cruz-Martinez et al, 2020; Granja et al, 2018; Reiners et al, 2019).

Some eHealth apps use artificial intelligence (AI) as a means of reviewing data inputted; where tasks are performed by patients themselves, whilst health professionals are utilised for complex circumstances. AI and gaming provide the patient with interactive educational, decision-making support mechanisms enabling the patient to actively engage in self-care. Certain groups of people, including those who are older, with lower incomes, less well educated or living in rural areas are less likely to have access to eHealth, so strategies are needed to overcome such disadvantages and avoid health inequalities (Reiners et al, 2019).

eHealth apps for HF need to be regularly updated and re-evaluated to ensure quality of data provided is evidence based and up to date (Barrett et al, 2019; Cruz-Martinez et al, 2020; Dunn Lopez et al, 2021; Granja et al, 2018). Rigorous cyber security is vital in eHealth (Dunn Lopez et al, 2021) to assure patients and other users that confidentiality will not be breached. The Department of Health and Social Care (2021) has issued guidance on digital and data-driven health technologies that includes how to operate ethically, usability and accessibility, clinical safety, data protection, data transparency, cybersecurity and regulation. In addition, NICE (National Institute for Health and Care Excellence, 2019) have produced a framework that describes standards for the evidence that should be available for digital health technologies to demonstrate their value in the UK health and care system.

The use of eHealth in HF has the potential to transform current ways of working, with the overall aim of enhancing practice and ultimately patient outcomes and experience. For eHealth in HF to be effective, it must be user friendly and personalised. It must have the capability to

interact with data monitoring using high level AI, making effective use of health care professionals' time with complex HF management, resulting in improved patient outcomes. Further research is needed regarding cost-effectiveness, efficacy, usability and patient outcomes.

However, in view of the burgeoning growth of HF, the opportunities and benefits that health technologies afford should be embraced by the HF community: patients, families and health professionals. Whilst not yet perfect, current technology is being continually refined, especially with the rapid advances in AI and VR, and though it is no substitute for the nuanced care provided by healthcare professionals, it is an important adjunct. At the very least, it deserves careful consideration in the efforts to combat this disease.

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