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## **Cognitive function assessment for personalized HF disease management programmes**

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Cognitive impairment is prevalent among patients with heart failure (HF) and impacts long-term outcomes.<sup>1</sup> The reduction in cerebral perfusion, microvascular damage and cerebral infarcts, decreased cardiac output and low blood pressure, and alterations in cerebrovascular reactivity may trigger and aggravate the cognitive alterations in HF patients.<sup>2</sup> Compared to HF patients without cognitive impairment or dementia, those with cognitive alterations are more likely to be readmitted and to die from any cause.<sup>3</sup> An interplay of several factors contributes to the poor outcome of HF patients with cognitive impairment, including the deterioration in the ability for self-care, the need for social, third-person or institutional support, the incapacity of adhering to treatment regimens (especially complex regimens with multiple pills), the difficulty in describing symptoms and changing health behaviours.<sup>4</sup> Despite the growing knowledge about the impact of cognitive alterations in HF, little is known on how to improve cognitive function and how cognitive alterations may impact specific HF interventions, including HF management programs.

In this issue of the journal Huynh QL and colleagues present an interesting analysis aiming to determine if the degree of cognitive impairment could influence the response to a HF management program. From a total pool of 1152 patients that had been prospectively followed for 1 year, 324 (28%) received a HF disease management program (HF-DMP) with a 1-month duration that included post-discharge phone calls and home visits, therapeutic and self-care education, transition of care (with a “transition” coach), exercise guidance and clinical review/assessment. As the HF-DMP was not allocated randomly, in order to mitigate the imbalance between patients who received and not received the program, the 324 patients who had received the HF-DMP were “matched” (using a propensity-score matching adjustment technique) with 648 patients who did not receive the HF-DMP

(i.e., they received “usual care”). At the time of study enrollment (before hospital discharge) the patients were screened for cognitive impairment using the Montreal Cognitive Assessment (MoCA) and during the 1-year follow-up hospital readmissions, deaths and days-at-home were recorded. Confirming prior studies,<sup>5</sup> poorer cognitive function was prevalent and independently associated with worse outcomes. On the other hand, the HF-DMP was independently associated with better outcomes, a finding that had also been previously documented.<sup>6</sup> However, whether the efficiency of a HF-DMP could be influenced by patients’ cognitive function has not been fully explored and is an important research question.

Based on the findings of this study, patients with diminished cognition benefited more from the HF-DMP than patients with normal cognition, findings that were consistent considering at 30- and 90-day readmissions or death and also the difference in days at home at 1 year. In fact, patients with normal cognition did not seem to experience any benefit from this HF-DMP. Still, one should note that patients with moderate/severe cognitive impairment also lost some of the potential HF-DMP benefit at 90 days.

It should be highlighted that one of the particularities of this HF-DMP is that it was delivered during 30 days after hospital discharge with home visits and phone calls, that were repeated several times and involving family/carer whenever possible. This might have been a key to the success of this program compared with others that were applied only in the hospital.<sup>7</sup> However, even with this 30-day extended intervention patients with normal cognitive function did not benefit from the intervention and patients with moderate/severe cognitive impairment only benefited during the 30 days of ongoing HF-DMP intervention. These findings suggest that there might exist a “sweet spot” of cognitive function where HF-DMP may provide the

most benefit. It is possible that patients with normal cognition do not benefit from HF-DMP because they can recall the information given during the hospital stay; on the other hand, patients with moderate/severe cognitive impairment only benefit during the intervention period and not after the intervention has stopped, because they may experience difficulties in recalling the instructions that had been given.

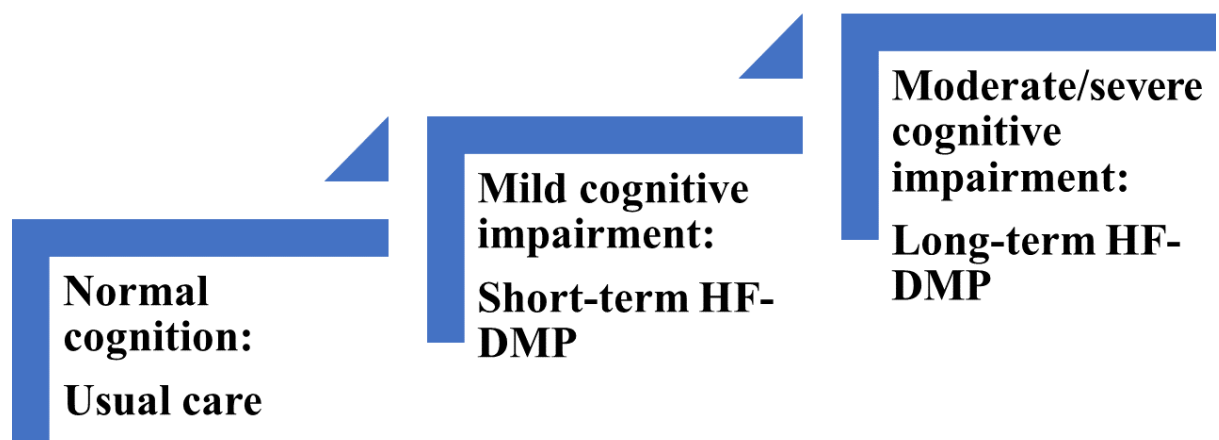
Based on the aforementioned findings, this study supports a personalized HF-DMP based on cognitive function screening, whereby patients with normal cognition would not be enrolled in such program, patients with mild cognitive impairment could benefit from a short- to medium-term intervention, and patients with moderate/severe cognitive impairment could benefit from continuous HF-DMP support to reduce readmissions and mortality. **Figure 1.** Of course, this hypothesis should be formally tested in a randomised controlled trial (RCT) before clinical application.

In conclusion, cognitive screening tools might help tailoring HF-DMP to patients' needs, but such hypothesis should be formally tested in a RCT.

## **Disclosures**

None.

Figure 1. Step-up support with HF-DMP based on cognitive function



Legend: HF-DMP, heart failure disease management program.

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