Coaches help to reduce heart failure re-admissions

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Emily Warrender June 30, 2025

Professor James Calvin from Western University's Department of Medicine presents his important research comparing two innovative methods for supporting patients in managing heart failure

Recently, my collaborators and I published a pilot pragmatic factorial trial comparing a coaching intervention and a smartphone reminder intervention. Patients were recruited into the pilot study and randomised into four intervention groups: COACH, SMARTPHONE reminder, BOTH interventions, or TREATMENT AS USUAL (TAU) care, using a parallel group design. This study aimed to determine whether coaching or smartphone reminder interventions could reduce all-cause hospital re-admission within six months of randomization, medication adherence to evidence-based therapy, and salt restriction.

In addition, we sought to determine whether there might be an interaction between the two active interventions.

Tackling heart failure re-admissions: What we did

Patients were screened from both a single cardiologist practice and a specialty heart failure (HF) clinic and were included if they were at risk of re-hospitalization, having been admitted to the hospital for heart failure within the previous three months. Patients were excluded if they were not likely to survive 12 months or were unable or unwilling to participate in the study. The coaching intervention (COACH group) was a one-on-one engagement between the coach and patient using a previously described coaching curriculum that consisted of eight 60-minute sessions delivered over three months. The smartphone intervention (SMARTPHONE reminder) was a text message-based intervention where the subjects received health tips, medication, and appointment reminders on a schedule, similar to the timing of coaching sessions. The study provided smartphones and data service. A research coordinator initiated text messages. Patients received two to three messages per day. Both interventions were combined into a third group (BOTH). The fourth group was the TAU group. Direct follow-up visits and an audit of the electronic record collected the primary endpoints.

What we found

Our population had an average age of 70 years, was 70% male, and had an average ejection fraction of 37%. Over 75% of the population had more than three comorbidities. At baseline, 91% of the patients were on a beta blocker, 85% were on an ACE inhibitor (ACE-I) or an angiotensin receptor blocker (ARB), and 96% were on diuretics. We found that despite a high number of ED visits, the COACH group had no ED visits or

hospitalizations for heart failure specifically, and the combined intervention, BOTH groups, had only an 8% ED visit rate or hospitalization compared to the SMARTPHONE intervention and TAU groups.

Medication adherence was maintained at a high level for diuretics and beta blockers for six months, and was 82% and 75% for ACEi or ARB's at three and six months, respectively. Salt consumption fell at three months in both the SMARTPHONE reminder and BOTH groups. Based on secondary analysis (unpublished data), we also determined that the depression scale measured by PHQ-9 fell significantly from 7.4 ± 6.7 to 2.5 ± 2.44. From these results, we conclude that the coaching intervention using a tested curriculum and a scheduled delivery methodology was a powerful means to reduce ED visits and readmission rates, and combining it with the SMARTPHONE intervention also had a dramatic effect on salt intake, making both interventions viable and better than treatment as usual.

The implications of heart failure re-admissions

Our trial design, which is multidisciplinary, multi-level, and incorporates new technology, integrates well into the chronic care model originally proposed by Wagner and colleagues. Wagner's model has six pillars: patient education, enhanced delivery system, evidence-based treatment, the use of information technology, the healthcare system itself, and the community. Our trial design incorporates four of these six pillars while keeping the pillars healthcare system and community as constants. The clinical trial design obviously tracks participants and creates a clinical database, while our interventions test the value of enhanced education through a coach or electronic reminders. The use of an up-to-date curriculum written at the level of a grade 8 education and emphasizing what HF is, its manifestations, what medications are used to treat it and why, what symptoms require immediate attention by an HF team, and how to engage the team were keys to success in the COACH group. Education and reminders about appointments and medications were also embedded in the SMARTPHONE group. In this way, the trial interventions facilitated the interaction of a prepared, proactive practice team with an informed, activated patient at the center. We believe our principles were key to our success and other emerging disease management modalities.

Beyond the monitoring (weights, vital signs, and symptoms), remote monitoring is growing increasingly sophisticated and is expanding beyond early telemonitoring to now include monitoring fluid in the lungs using transthoracic impedance, hemodynamic monitoring using implanted devices in the pulmonary artery or left atrium, or using rhythm devices such as ICDs or CRTD. Hemodynamic monitoring and rhythm devices have demonstrated sensitivities of 65-70% to predict heart failure hospitalization.

While technology can now detect lung congestion at early stages, remote monitoring requires a response system that provides, in addition to an alarm, an appropriate patient or care provider response in a real-time period. Most monitoring systems use the clinical team to respond, which may take up to 72 hours. In the future, Machine Learning algorithms may incorporate the provision of a prescription or care suggestions for the

patient to intervene early once an alert is activated. Our data suggests that until that time in the future, well-trained coaches can play an important role in preventing hospitalization. They achieved this by creating a trusting relationship with the patient, providing clear information to the patient for what to monitor and what to do when symptoms worsen, or an alarm is signaled, and preventive strategies around medication adherence and lifestyle change, especially around diet (salt consumption).

One key to our success was that our coaching intervention included a brochure on HF education with a prolonged coaching schedule on how patients can strategically use the information and recognize barriers to recommendations for the patients to self-identify. The educational materials used simple and understandable metaphors. The heart was the ‘workhorse carrying a load’ (blood
and water) down the ‘road’ (artery). Water pills ‘lighten the load’ and vasodilators ‘widen the road.’ The importance of medication adherence and recommended lifestyle changes was also emphasized.

Eynan R, Petrella R, Forchuk C, Zwarenstein M and Calvin J. Randomized pilot study comparing a coach to SMARTPhone reminders to aid the management of heart failure(HF) patients: humans or machines. BMJ Open Quality2024;13:e002753.

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