

Innovation in Heart Failure Care: Comparing Personal Coaching with Digital Support

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Heart failure remains one of the most challenging conditions facing healthcare systems today, with hundreds of thousands of new cases diagnosed annually. Professor James Calvin from Western University's Schulich School of Medicine and Dentistry has led groundbreaking research comparing two innovative approaches to supporting patients: personal health coaches and smartphone reminders. His team's findings suggest that combining human support with digital technology could transform how we help patients manage this complex condition.

The Growing Challenge of Heart Failure

As populations age worldwide, heart failure has emerged as a critical healthcare challenge, affecting between 0.4% and 2.2% of people in industrialised nations. Each year brings 500,000 to 600,000 new diagnoses, creating an overwhelming burden on healthcare systems. In Canada alone, the direct costs exceed \$2.8 billion annually, driven largely by hospital admissions and emergency department visits.

Professor Calvin has witnessed firsthand the devastating impact of this condition throughout his career. As a leading cardiologist at Western University, he has seen how patients struggle to manage their condition after leaving hospital, often leading to repeated admissions that are both costly and detrimental to patients' quality of life.

Rethinking Patient Support

Recognising that poor treatment compliance is a leading cause of hospital readmissions, Professor Calvin and his research team designed an innovative study to test new approaches to supporting patients. Rather than focusing solely on traditional clinic visits, they explored whether providing ongoing support through either personal coaches or smartphone reminders could help patients better manage their condition.

The research team developed a comprehensive study comparing four different approaches: personal coaching alone, smartphone reminders alone, a combination of both interventions, or standard care. They carefully selected 54 patients who were at high risk of hospital readmission, using a sophisticated scoring system that considered factors such as previous hospital stays and overall health status.

A Human Touch: The Coaching Programme

The coaching intervention developed by Professor Calvin's team provided intensive, personalised support over three months. Coaches met with patients in one-on-one sessions called 'Ticker Talk', which followed a carefully structured curriculum covering essential aspects of heart failure management. These sessions began with fundamental education about heart failure itself, helping patients understand their condition and its implications. Subsequent meetings addressed crucial topics, including medication management, dietary restrictions, fluid monitoring, and exercise. Coaches worked with patients to develop practical strategies for incorporating these elements into their daily routines. The programme was front-loaded, with weekly sessions in the first month to establish strong foundations, followed by bi-weekly meetings in the second and third months. This tapering approach helped patients build confidence while gradually becoming more independent in managing their condition.

Harnessing Technology: The Smartphone Intervention

Alongside the coaching programme, Professor Calvin's team developed a sophisticated smartphone-based support system. This technological intervention delivered carefully timed messages throughout the day, providing regular reminders and guidance to help patients stay on track with their treatment plans. The system sent two to three messages daily between late morning and early evening, carefully scheduled to align with typical medication times and daily routines. Messages included medication reminders, prompts to check weight and symptoms, and practical advice about diet and exercise.



Understanding that not all patients would have access to smartphones, the research team provided devices and basic training to participants who needed them. They also included a basic voice and data plan to ensure patients could receive messages and communicate with their healthcare team if necessary.

Promising Results for Reducing Readmission Rates

The results of Professor Calvin's study proved remarkable, particularly for patients receiving coaching support. None of the patients in the coaching-only group required readmission to hospital for heart failure during the six-month study period. This stood in stark contrast to the other groups, where readmission rates ranged from 8% to 18%.

The smartphone intervention showed particular strength in helping patients maintain their medication schedules and follow dietary guidelines. Patients receiving smartphone reminders demonstrated improved adherence to their prescribed treatments and better compliance with dietary restrictions, especially regarding salt intake.

Perhaps most intriguingly, the group receiving both interventions showed signs of synergy between the two approaches. While their readmission rate was higher than the coaching-only group, they demonstrated the best overall compliance with dietary restrictions and maintained strong medication adherence throughout the study period.

Understanding the Mechanisms of Success

Professor Calvin's team conducted detailed analyses to understand why these interventions proved effective. The coaching sessions appeared to work by building deep understanding and confidence while providing emotional support and accountability. Coaches could address individual concerns and help patients develop personalised strategies for managing their condition.

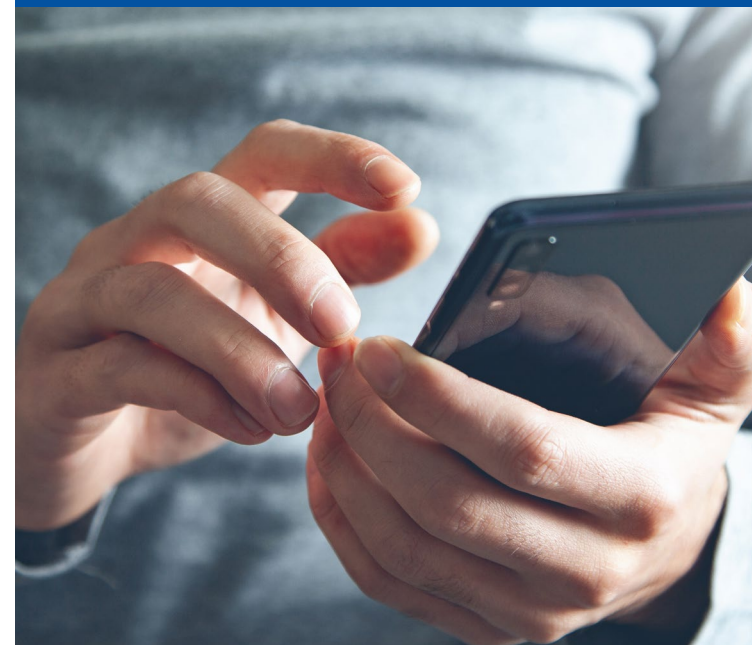
The smartphone intervention succeeded through different mechanisms, providing consistent daily support and timely reminders. This regular technological touch point helped patients maintain their treatment routines and encouraged ongoing self-monitoring between clinical visits.

Implications for Healthcare Systems

The economic implications of these findings are significant. Professor Calvin's analysis suggests that implementing similar support systems could generate substantial savings through reduced hospitalisation rates. In their hospital system alone, reducing readmissions by 50% could save millions of dollars annually, even after accounting for the costs of providing coaches or smartphones. This economic benefit becomes particularly relevant as healthcare systems worldwide face increasing pressure to reduce costs while improving care quality. The study suggests that investing in preventive support systems could generate significant returns through reduced acute care needs.



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While the results are promising, Professor Calvin emphasises that this was a pilot study with a relatively small number of patients. His team has calculated that a definitive study would need approximately 1,400 participants to provide conclusive evidence of the interventions' benefits.

The research team is particularly interested in exploring how coaching and smartphone support might be combined more effectively, especially for patients who live far from medical centres. They are also investigating ways to adapt these interventions for different healthcare settings and patient populations.

The Evolution of Treatment Approaches

Since the study began, heart failure treatment has evolved significantly, with new medications becoming available and treatment guidelines being updated. Professor Calvin notes that future support programmes will need to incorporate education about these advanced treatment options while maintaining their focus on fundamental self-management skills.

The team is also exploring how artificial intelligence and machine learning might enhance the smartphone intervention, potentially allowing for more personalised and responsive support based on individual patient patterns and needs.

Transforming Patient Care

Professor Calvin's research points toward a potential transformation in how we support patients with heart failure. Rather than relying solely on periodic clinic visits and emergency care when problems arise, healthcare systems could provide more consistent, preventive support through a combination of human coaching and technological assistance. The study highlights the enduring importance of human connection in healthcare, even as technology plays an increasingly significant role. While smartphone reminders proved valuable for day-to-day support, the human element of coaching appeared to offer unique benefits that technology alone could not replicate.

MEET THE RESEARCHER

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Professor James Calvin obtained his medical degree from Dalhousie University and later completed his MBA at the University of Tennessee. Following a postdoctoral fellowship at the University of California San Francisco, he established himself as a pioneering figure in critical care and cardiology. As Chair of Cardiology at Rush University Medical Center, he has made significant contributions to acute coronary syndrome research, developing the first validated risk stratification model. As Ivey Chair of Medicine at Western University, he expanded his clinical research in quality improvement, heart failure and healthcare leadership, including founding the Centre for Quality, Innovation and Safety. His career achievements include successful initiatives in heart failure management and transformative contributions to patient care practices. He has published extensively, with over 330 papers, and has secured numerous peer-reviewed grants while maintaining influential leadership roles in academic medicine and hospital administration.



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FURTHER READING

J Calvin, *et al.*, [Randomised pilot study comparing a coach to SMARTPhone reminders to aid the management of heart failure \(HF\) patients: humans or machines](https://doi.org/10.1136/bmjopen-2024-002753), *BMJ Open Quality*, 2024, 13, e002753. DOI: <https://doi.org/10.1136/bmjopen-2024-002753>



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