Commentary

Transitional care interventions for heart failure: what are the mechanisms?

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Two decades ago heart failure clinics were proposed widely as an effective means of improving care.\textsuperscript{1} Despite dozens of trials over subsequent years, it has often been difficult to ascertain the true effectiveness of such programmes due to poor descriptions of study populations, interventions, comparators and outcomes. This is compounded by the use of terms such as ‘transitional care’, ‘integrated care’, ‘coordinated care’, ‘community care’, ‘person-centred care’. These differences in terminology continue to make drawing conclusions of the effectiveness of interventions difficult. More recent studies refer to ‘transitional care interventions’, defined as “\textit{a broad range of time-limited services designed to ensure health care continuity, avoid preventable poor outcomes among at-risk populations, and promote the safe and timely transfer of patients from one level of care to another or from one type of setting to another}” (p. 747).\textsuperscript{2} While this definition overlaps with other forms of established care (primary care, care coordination, discharge planning, disease management, case management) and there no clear consensus on when the transition period ends, at least this definition is inclusive.

Recent systematic reviews of transitional care provide some supporting, though imprecise, evidence. There is consensus as what interventions should focus on: patient/caregiver education, medication reconciliation, coordination with outpatient providers, arrangements for future care, symptom monitoring, home visits, telephone support. Of two recent systematic reviews and meta-analyses\textsuperscript{3,4} of transitional interventions, one found that home-visiting programs and multi-disciplinary heart failure clinics reduced all-cause readmission (RR (95% CI) 0.75 (0.68-0.86); 0.70 (0.55-0.89) respectively) and mortality (0.77 (0.60-0.997); 0.56 (0.34-0.92) respectively) at 3-6 months and structured telephone support reduced heart failure-specific readmission (0.74 (0.61-0.90) and mortality (0.74 (0.56-0.97) at 3-6 months.\textsuperscript{3} This review concluded that these
interventions should receive the greatest consideration by health care providers.\textsuperscript{3} The other systematic review and network meta-analysis testing the efficacy of transitional care provided beyond one month of follow-up found that nurse home visits and nurse case management reduced all-cause readmission (incident rate ratio (IRR) 0.65 (0.49-0.86); 0.77 (0.63-0.55) respectively) and nurse home visits and disease management clinics reduced all-cause mortality (RR (95% CI) 0.78 (0.62-0.98); (0.80 (0.67-0.97) respectively).\textsuperscript{4} Interestingly, nurse home visits and nurse case management had greater pooled cost savings than (US$3810 and US$3435 respectively) than disease management clinics (US$245).\textsuperscript{4}

These analyses incorporated trials which though categorized under the broad heading of ‘transitional care’ reported a wide range of heterogeneous interventions. Consequently, the key characteristics of effective interventions cannot be discerned. These components were identified in a systematic review of transitional care strategies and heart failure readmission that identified eight characteristics were integral to improving long-term outcomes: discharge planning; multiprofessional teamwork, communication and collaboration; timely, clear and organized information; medication reconciliation and adherence; engaging social and community support groups; monitoring/managing signs and symptoms after discharge and delivering patient education; outpatient follow-up; and advanced-care planning and palliative and end-of-life care.\textsuperscript{5}

Finally, a systematic review of the impact of heart failure care systems found that access to a specialist heart failure team/service reduced hospital readmissions and mortality and that in the transitional care phase disease management programs and nurse-led clinics reduced hospital readmissions.\textsuperscript{6} As nurses are invariably and inextricably linked with driving
all of these activities, consequently they play a key role, directly and indirectly, in reducing readmission.

This evidence taken as a whole provides compelling evidence attesting to the value and effectiveness of transitional care interventions in reducing all-cause readmission and mortality and costs. In order to ensure the evidence is stronger there is a need for better defined and described, sufficiently-powered head-to-head trials to show efficacy. The evidence base would be enhanced by including measures of caregiver burden and analysis of costs, clearly distinguished intervention components and outcomes, including process evaluations and follow-up beyond two years.

**Moving from measuring outcomes to understanding outcomes**

The need for deeper and more useful knowledge from trials must be recognized. These are complex interventions and simplistic approaches to evaluation focused on ‘headline effect sizes’ don’t identify the key characteristics of this heterogeneous interventions and are unlikely to persuade sceptics wary of excessively simplistic evidence.\(^7\)-\(^{11}\) Indeed, we recommend that evidence continue to move from establishing whether interventions work to establishing why they work and in what context - in short, to understand the main mechanisms of interventions and how context moderates this.\(^9\) However, although research into intervention mechanisms has been prominent for some decades – for example, in a large and growing volume of research\(^{12}\), review approaches\(^{13}\), frameworks\(^{14}\) and methods\(^{15}\), there have been no detailed primary studies of the mechanisms of these complex and common interventions. A primary reason for this may be the challenge of researching mechanisms – a concept which like the complexity of the interventions described, is often poorly defined and theorized. Mechanisms in social and health sciences research are often wrongly defined or handled as statistical associations – rather than what ‘explains’
outcomes. Rather, mechanisms should be considered to be that which is “responsible, subject to circumstances, for the observable degree of regularity.” (p. 58). Accordingly, mechanisms constitute the ‘black box’ between an interventions inputs and its outputs – they are causal in nature, often unobservable, and may be associated with benefits, harms and costs of an intervention. Finally, instead of just being singular factors, mechanisms can be seen themselves as complex systems that affect outcomes via the interaction of a number of intervention parts.

No dedicated primary studies have been done of the mechanisms of heart failure disease management interventions. This is curious but understandable because while theories and approaches invoking mechanisms of complex interventions conceptually are prominent, mechanisms have received less attention in recent complex intervention research and methods. Consequently, practical guidance on how to identify, disentangle and verify mechanisms in complex interventions research has remained scant. Yet, a review of studies containing data pertaining to mechanisms identified that successful interventions for heart failure patients mobilize mechanisms that increase patient understanding of their condition and its links to self-care, promote the involvement of other people in this self-care, improve psychosocial well-being and attain support from health professionals to use technology. Again, these roles are all potentially central to transitional care. This suggest that mechanisms offer an influential but as yet relatively untapped source of insight into the influence of transitional care interventions for heart failure.

References


