ACRA 2019
CONFERENCE ABSTRACTS

Australian Cardiovascular Health
and Rehabilitation Association

A consumer-led model of care to increase female participation in cardiac rehabilitation

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Background: Cardiac rehabilitation after a heart event decreases healthcare costs and improves patient quality of life. Data collected in a rural hospital showed that females are less likely than men to attend cardiac rehabilitation programs. The aim of the research: 1) Design a new cardiac rehabilitation service for women based on their 2) Determine if the implementation of this program increases the participation the cardiac rehabilitation.

Methods: This research utilised a mixed methods approach in which quantitative data was collected and then used to identify females who presented to hospital in the past 5 years and were eligible to receive cardiac rehabilitation. Surveys were sent to those women to determine attendance at cardiac rehabilitation and factors that affected their ability to attend. From these surveys an invitation to attend focus group discussions. The focus group participants were questioned on cardiac rehabilitation program that would fit into their lifestyle and increase likelihood of participation.

Results: There were 220 surveys sent and 70 returned. Of these, 20 women agreed to attend focus groups. Their involvement gave insight into the factors that effected their ability to attend cardiac rehabilitation. The results provided recommendations to improve education, provide easier access to attend the cardiac rehabilitation program.

Conclusions: The women who participated in our research gave valuable insight into the factors that impacted their ability to attend cardiac rehabilitation. Currently in the process of creating the new model of care.

A National Survey of Australian Cardiac Rehabilitation Programs: Does current exercise programming adhere to evidence-based guidelines and best practice?

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1. University of Sydney, NSW, Australia

Background: Exercise-based cardiac rehabilitation (CR) improves patient outcomes when guideline compliant. This survey aims to identify Australian CR exercise practices in relation to current guidelines - a more targeted approach than the broadly-focused 2016 survey.

Methods: A detailed survey was distributed by email to all publicly-listed CR clinics on the Australian Cardiac Rehabilitation Association database. The survey requested information on the characteristics of the clinic, patients, screening processes and exercise prescription. Questionnaires were completed by the CR clinic manager. Potential relationships between categorical variables of interest were evaluated using Chi-square tests, with $p<0.05$ accepted as significant.

Results: From the 422 listed clinics, 228 survey responses were received (54%), primarily from metropolitan clinics in NSW and Victoria. Exercise was primarily supervised by nurses or physiotherapists, with only 30% having an exercise physiologist (EP) alone or as part of the team. Initial screening practices are presented in Figure 1. Notably, 24% of clinics reported they did not review physician referrals, and 42% did not assess ECG/heart rate prior to exercise. Both aerobic and resistance exercise were "Always" prescribed in only 58% of clinics, increasing to 84% when an EP was on staff.

Conclusions/Implications: Exercise assessment and prescription varied widely across Australia, which may be influenced by clinical personnel in part. These results may warrant an education or audit program to promote consistent clinical practice concordant with current CR core guidelines and evidence base.

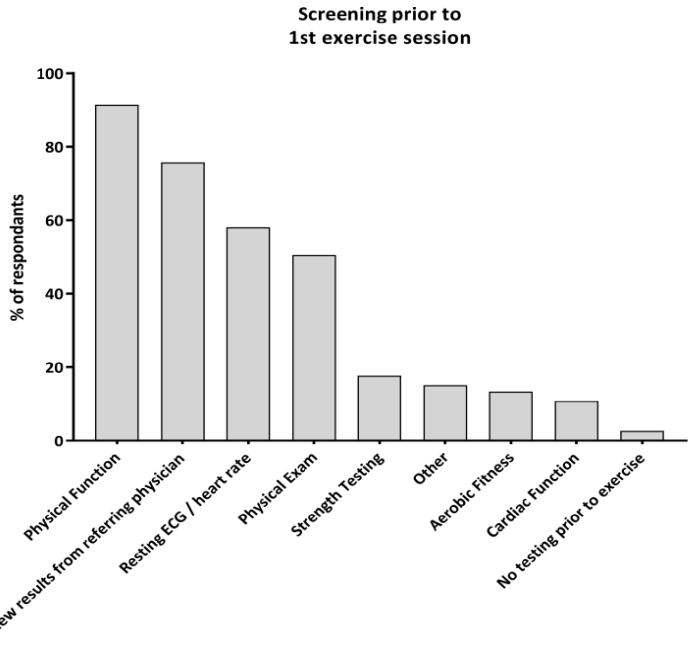

Figure 1: Summary of screening conducted prior to first session expressed as proportion of respondents (%; n = 186). Note that each respondent was able to make multiple selections.

A randomised controlled trial of a comprehensvie WeChat-based cardiac rehabilitation and secondary prevention program in China

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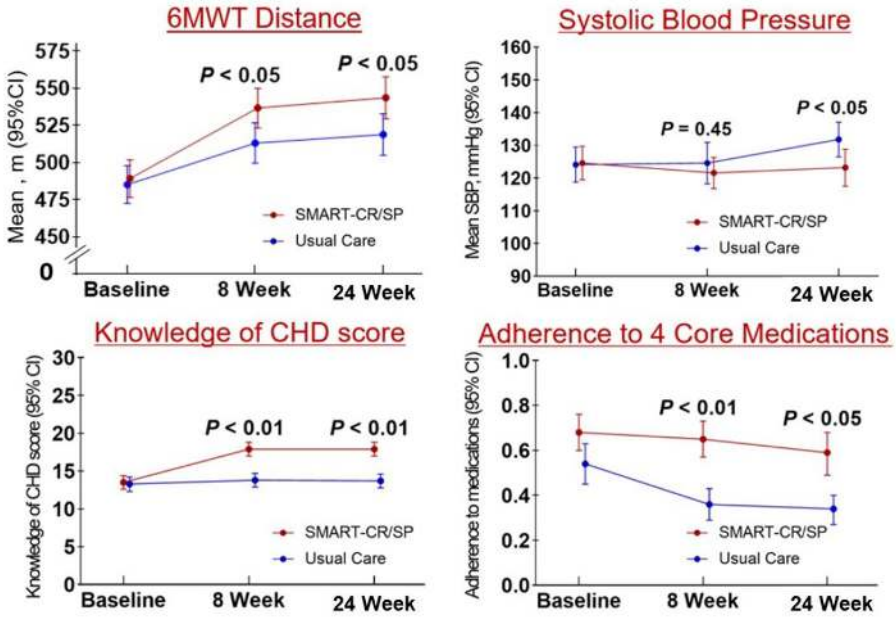
1. Curtin University, WA, Australia

Background: Mobile health-based cardiac rehabilitation and secondary prevention (CR/SP) are rapidly evolving. However, no trials to date have evaluated the effectiveness of CR/SP delivered exclusively via a social media platform.

Methods: Patients with coronary heart disease were randomized (1:1) to an eight-week intensive, followed by a 16-week 'step down' program of SMART-CR/SP, or usual care, with assessments at baseline, eight and 24 weeks. The primary outcome was functional capacity measured by six-minute walk test distance (6MWTD). Secondary outcomes included knowledge and awareness of coronary heart disease, and risk factor control.

Outcomes: 312 patients (mean age, 60.5 [SD 9.2] years, 81.4% men) were randomised to SMART-CR/SP or usual care. The mean adjusted increase in 6MWTD was greater following both eight (46.5 vs. 20.9m; 95% CI, 4.6 to 35.9m; p=0.011) and 24 weeks (54.2 vs. 26.2m; 95% CI, 6.5 to 39.7m; p=0.006) of SMART-CR/SP, versus control. The SMART-CR/SP group had a better knowledge of coronary heart disease score at eight (17.9 vs. 13.8; 95% CI, 2.84 to 5.44; p<0.001) and 24 weeks (17.9 vs. 13.7; 95% CI, 2.91 to 5.51; p<0.001). Systolic blood pressure (123.2 vs. 131.8 mm Hg; 95% CI, -16.4 to -0.9 mm Hg; p=0.029), resting heart rate (69.3 vs. 75.4 bpm; 95% CI, -11.9 to 0.3 bpm; p=0.039) and adherence to core cardioprotective medications (OR, 1.8, 95% CI, 1.1 to 3.0; p=0.017) were improved following 24 weeks of SMART-CR/SP, but not control.

Conclusion and Implications for practice: Among patients with coronary heart disease, the used of SMART-CR/SP compared with usual care resulted in improvement of functional capacity, blood pressure, medication adherence, knowledge and awareness of coronary heart disease. This indicates social media-based CR/SP is an effective and potentially more accessible and affordable means of service delivery, and justifies the implementation of this novel model of care on a broader scale.



A randomised controlled trial to determine the feasibility of a web-based lifestyle intervention for women with a history of pre-eclampsia: Be Healthe for your Heart Study

Melinda Hutchesson[1], Rachael Taylor, Lisa Vincze, Vanessa Shrewsbury, Felicity Park, Linda Campbell, Robin Callister, Clare Collins

1. University of Newcastle, NSW, Australia

Background: Women with a history of preeclampsia are at two times greater risk of cardiovascular disease (CVD) related morbidity. Clinical practice guidelines recommend women with a history of preeclampsia have regular CVD risk factor assessment (e.g. blood pressure, serum lipids), and receive counselling specific to lifestyle risk factors (e.g. eating habits, physical activity). There are currently a lack of services addressing CVD prevention in this group. The aim of this pilot randomised control trial is to determine acceptability and preliminary efficacy of a web-based healthy lifestyle intervention for women with a history of pre-eclampsia (Be Healthe for your Heart: BH4YH). This abstract will evaluate the interventions acceptability.

Methods: Women, aged 18-45 years, with recent (= 4 years) pre-eclampsia were randomly allocated to BH4YH or control group for 3-months. BH4YH is tailored to women of childbearing age and delivered via a website and emails. BH4YH supports changes to lifestyle behaviours associated with CVD risk, using behaviour change techniques (e.g. self-monitoring, goal setting). Intervention acceptability will be evaluated after 3-months via an online survey including 40 questions related to intervention usage, satisfaction, usability, appropriateness and reasons for engagement/non-engagement. Survey questions will require participants to indicate their level of agreement with specific statements and describe what they liked and what could be improved.

Results: 3-month follow-up will be completed in July 2019, and results from both quantitative and qualitative data pertaining to intervention usage, satisfaction and usability will be presented.

Conclusions/Implications: Findings of the feasibility study will inform future intervention development

Activity and Outcomes of a Nurse Led Heart Failure Service

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1. Nepean Hospital, NSW, Australia

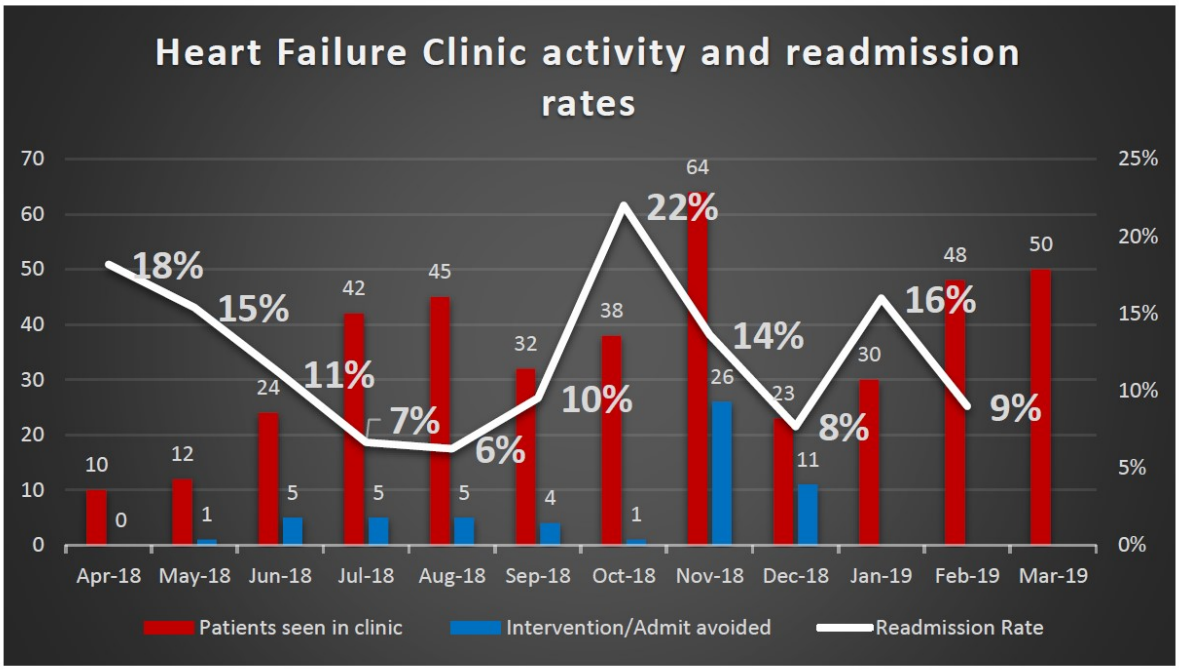
Background/Rationale: 30 day readmission rates for heart failure (HF) are high and often result in longer admissions and higher mortality. The Leading Better Value Care (LBVC) initiative led to the implementation of a nurse led Nepean Heart Failure Service to improve the service and decrease the readmission rate, modelled on the results of the recent ETHERLED trial (Huynh 2018). We sought to assess activity and effectiveness of a nurse led heart failure clinic.

The outpatient service provides a one week and one month follow up clinic to review HF status, reinforce education, monitor pathology, and to help facilitate medication optimisation. HF specific exercise programs are also offered. A HF crisis clinic is available for the stabilisation and potential admission avoidance for patients who deteriorate post discharge.

Methods: We tracked monthly activity of the HF/crisis clinic, admissions avoided and monthly readmission rate. We also documented annual readmission rate for 2018.

Results: The increase in service utilization follows seasonal patterns for heart failure (Figure 1). Total admissions avoided was 58, and the all cause readmission following a primary admission for heart failure was 11.7% in 2018.

Outcomes: The nurse led heart failure service has seen a growth in activity and service utilization. The relatively lower readmission rate needs to be compared to historical controls and peer hospitals for an assessment of effectiveness of the LBVC policy initiative.



BRAVE Hearts

Tania Arnott[1], Jannie Denyer

1. Mid North Coast Local Health District, NSW, Australia

Background/Rationale: The Port Macquarie Hospital Cardiac Rehabilitation `goal session' has been operational since 2016. However, the team found the session provided little patient/carer engagement or partnership with clinicians/volunteers.

Method: In 2017, the Caring Conversation Framework (a relational approach developed by Professor Belinda Dewar) was incorporated into the session with the aim to engage & empower patients/carers to shape cardiac rehabilitation recovery in a way that was meaningful for them.

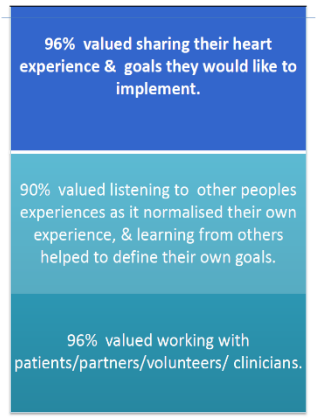
Outcomes/Implications for practice: In 2018, the new session approach was evaluated.

Results highlighted patients/carers:

- felt sharing their heart experience & ideas were valued by others in the group;
- felt that hearing others share their heart experience helped normalise their own experience which then gave them purpose to move forward with their cardiac health recovery;
- valued engagement & partnership with clinicians/volunteers.

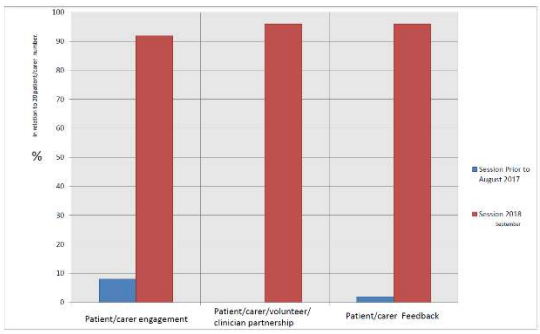
Success of the initiative has captured interest from other Cardiac Rehabilitation services to incorporate the framework into their settings as well.

2. ***Patients/Partners Post-Evaluation Feedback on what they Value about the PMBH Cardiac Rehabilitation Goal Session.*** *September 2018 Sample size: 20 Evaluation using the Positive Inquiry Tool*

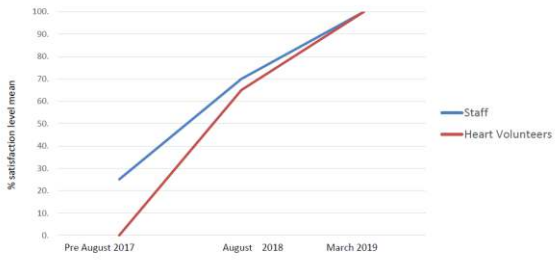


Conclusion: The Caring Conversation framework provides a powerful means to connect, partnership & work with patients/carers to enable them to define their experience, & with this insight they are able to shape their recovery in a way that matters to them.

1. Pre/Post Caring Conversation Session Implementation comparison measuring Patient/Carer Engagement/Partnership/Session Feedback from Patients/Carers
Tool used: Positive Inquiry Tool



3. Team/Volunteer Satisfaction Level Post Implementation of the Caring Conversation Framework into the Cardiac Rehabilitation Goal Session.



Results indicate a sustainable shift from low staff/volunteer satisfaction pre-implementation to 100% satisfaction in 2019.

Cardiac rehabilitation quality assessment and benchmark developing for NSW, ACT and Tasmania

Robyn Gallagher[1], Dion Candelaria, Robert Zecchin, Cate Ferry

1. University of Sydney, NSW, Australia

Background: The quality of cardiac rehabilitation (CR) delivery influences referral rates, patient uptake and outcomes, yet quality assessment and benchmarks are lacking in Australia.

Purpose: To conduct a snapshot of CR to underpin a minimal set of national quality benchmarks.

Methods: CR sites volunteers were selected to represent metropolitan, rural and regional areas New South Wales (NSW), Tasmania and Australian Capital Territory (ACT). Data were collected on 11 quality indicators (based on pilot) for delivery and outcomes.

Results: Participants' (n=2436) mean age was 66.3±12.5 years and were 68.5% male, 17% culturally and linguistically diverse with ACS (46%), cardiac surgery (23%) and elective PCI (10%).

Sites were NSW (n=36), Tasmania (n=2) and ACT (n=1); delivering centre-based (97%), home-based (44%), education only (44%), telehealth or phone coaching (17.9%) and group (2.5%) programs.

CR Delivery. Median waiting time was 15 days (IQR 9-25), 59% completed, 75% were referred to GP/specialist and 37% to CR follow-up. Entry and discharge assessment occurred for adiposity (62%, 45%), exercise capacity (59%, 42%), guideline medications (97%, 61%) and entry only for depression (89%) and smoking (97%). Referral for positive screen for depression and smoking occurred for 77% and 78%.

CR Outcomes. Improvements occurred in waist circumference 1.16 cms (95%CI -1.44, -0.89) and exercise 69.17 meters 6MWT (95%CI, 64.77, 73.61) and 3.06 in metabolic equivalents (95%CI 2.82, 3.36).

Conclusions: This cross-state CR quality snapshot provides baseline data for developing national level benchmarks for CR delivery and outcomes in Australia.

Cardiac telerehabilitation combines near-universal accessibility with expert oversight: protocol for the SCRAM randomised controlled trial

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1. Institute for Physical Activity and Nutrition, Deakin University, VIC, Australia

Background: Cardiac rehabilitation (CR) saves lives and improves wellbeing but key accessibility barriers prevent many people from participating - especially outside metropolitan/urban areas where access to face-to-face programs is lowest. Our cutting edge telerehabilitation intervention (SCRAM) remotely connects people with CR specialists to receive evidence-based support regardless of their location. This abstract describes the protocol for a randomised controlled trial (RCT) that will compare the effects and costs of SCRAM with usual care CR.

Methods: A multi-centre, single-blind, parallel arm RCT will compare the effects and costs of SCRAM with usual care CR among 220 people with coronary heart disease living in urban, regional, and rural areas of Victoria, Australia. All participants will retain access to usual care CR and half will also receive SCRAM - a 24 week dual-phase intervention comprising real-time remotely supervised exercise training and behaviour change support delivered via a bespoke telerehabilitation platform. Outcomes assessed at 0, 12 and 24 weeks will include maximal exercise capacity (primary outcome at 24 weeks), medical and lifestyle risk factors, program delivery costs, and cost-effectiveness. A mixed-methods process evaluation will assess user experiences.

Results: Recruitment began in October 2018 and is ongoing.

Conclusion: SCRAM overcomes key accessibility barriers while retaining a high level of oversight and support from CR specialists. If proven cost-effective this world-leading delivery model could greatly increase the impact of CR by reaching many people who currently have limited access to traditional face-to-face services.

Clinician and Consumer co-development of an avatar-based education application for improving knowledge and self-care behaviours for patients with heart failure

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1. Flinders University, SA, Australia

Background: Effective self-care in Heart Failure (HF) is important for optimal patient outcomes. Avatar technology has shown benefits in improving knowledge and self-care behaviours.

Purpose: To develop and evaluate an interactive avatar-based application for improving HF knowledge and self-care.

Methods: Participatory action research was used with consumers, HF clinicians and IT experts, to develop the avatar application. Feasibility testing using pre and post-test methods was performed to evaluate knowledge, self-care and satisfaction.

Results: Based on the feedback from HF patients, HF family members, HF clinicians and IT experts in this co-design, avatar characteristics, images, navigation, concepts, language and quizzes of the application were updated for improving user experience.

Thirteen participants (66 ± 13 years, 76.9% male) were recruited to assess the application's feasibility. After using the app there was a significant improvement in HF knowledge (median (IQR): 80.0 (70.0 - 93.3) to 86.7 (76.7 ± 96.7), p = 0.020), self-care maintenance (82.5 (70.0 ± 82.5) to 85.0 (77.5 -96.3), p = 0.027) and self-care confidence (75.0 (72.9 ± 91.7) to 100.0 (95.9 ± 100.0), p = 0.002). Self-care management did not significantly improve (62.5 (72.7 ± 91.7) to 75.0 (29.2 ± 93.8), p = 0.113). Participants reported a high level of overall satisfaction with the application that included their feedback (90%). There were no particular demographic or clinical characteristics that correlated with changes in HF knowledge and self-care behaviours.

Conclusion: The avatar-based technology is feasible for improving HF knowledge and self-care. Employing a participatory approach is acceptable and appropriate to meet appropriate user experience.

Community Collaboration to Enhance Long Term Adherence to Exercise

Tracy Sparks[1], Adam Demirtel

1. Sunbury Community Health, Victoria, Australia

Our eight week cardiac rehabilitation program at Sunbury Community Health (SCH) is a multi-disciplinary program coordinated by a Nurse and an Exercise Physiologist. Originally it was one exercise and education session per week at SCH. We experienced limitations in space, available exercise equipment, and limitations in our clients continuing with exercise and healthy lifestyle choices after the eight week program.

Our underlying principals in community health are wellness, reablement and empowering our clients to be independent. To better align our program with these, we came up with the innovative idea of running our cardiac rehabilitation program out of the Sunbury Aquatic and Leisure Centre (SALC), which is operated by Hume City Council.

In 2018, we developed a proposal to Hume City Council, which focused on our shared community objectives, and mutual benefits. The proposal was accepted and our cardiac rehabilitation program was transferred to SALC.

The benefits have included: larger space with more available equipment, ability to offer two exercise sessions for clients per week, and familiarization of an external exercise setting for clients which develops their confidence and independence.

The results are a higher percentage of our clients adhering to their exercise program in the medium to long term, with many clients becoming SALC members. The collaboration with SALC gym staff has been enhanced and they are able to provide ongoing support to our transitioned clients, whilst we have been able to provide them with education around safe exercise parameters and desired outcomes.

Delivery of outpatient cardiac rehabilitation using a GP Hybrid / Telephone Program model

Claudine Clark[1], Philip Tideman, Rosy Tirimacco, Teena Wilson, Jan Dale-Harris

1. Integrated Cardiovascular Clinical Network – Country Health, SA, Australia

Background: The Country Access to Cardiac Health (CATCH) telephone program was established to increase the uptake of cardiac rehabilitation (CR) in regional South Australia for patients unable to attend traditional group programs. The GP Hybrid program was later established to further expand CR service provision and offer collaborative care with the patient's general practitioner (GP).

Method: All country patients referred for an outpatient CR program who are eligible for a GP Management Plan (GPMP) and attend a GP clinic involved with the GP Hybrid program can be enrolled. Program involves initial nursing assessment by CATCH CR nurse, development of GPMP with the patient by GP and practice nurse, calls from CATCH CR nurse and allied health team over seven weeks, followed by 6- and 12-month reviews. All data is recorded on the CATCH database for documentation and ongoing evaluation of outcomes.

Outcomes: High 'commencement' and 'completion' rates. Patient health outcomes show clinical results meeting Heart Foundation guidelines, good medication adherence and no hospital readmissions.

Conclusions: The GP Hybrid program provides patient advocacy through a collaborative care approach between the CR nurse, GP and practice nurse. It is a patient-centred approach to patient's health management, engaging all stakeholders and correspondence provided to the patient, GP and Cardiologist. The GPMP ensures long-term management of the patient's cardiovascular disease and other chronic comorbidities.

Acknowledgement: Integrated Cardiovascular Clinical Network (iCCnet) CHSA gratefully acknowledges that this service is supported by funding from Country SA Primary Health Network through the Australian Government's PHN Program.

Depression-screening using PHQ9: the experience of a cardiac rehab program at a metro tertiary hospital

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1. St Vincent's Hospital Melbourne, VIC, Australia

Background/Method: Depression-screening and management is relevant for people after a cardiac event. Over a 2-year period from 2017, all 135 consecutive participants commencing cardiac rehabilitation were included in this quality-improvement observational study.

Results: 114 participants (84%) had a pre-program PHQ9-score (median=5, SD 5.1, [0, 24]). 62 of these participants (54%) were lost to follow-up for PHQ9 due to: participant drop out (78%), staffing issues (15%) and lack of interpreter (5%). 52 pairs were available for analysis (mean age=63.7, SD=10.2, [32, 82]). There was an improvement in PHQ9 score between pre versus post program (median= 4, [0, 12] vs median=3, [0, 22]; Wilcoxon's Signed Ranks Test = 255.0, SE 76.76, p=0.022) with a mean episode of treatment of 97 days. Of those 62 participants lost to follow-up (mean age= 61.1, SD=12.6, [22, 84]), they had a higher median PHQ9 score of 2 (median=6, [0, 24]). There was a statistically significant difference of this group compared with those who were not lost to follow-up (Mann Whitney U Test=1182, p=0.014).

Conclusion: Cardiac rehab completers demonstrated a modest but significant reduction in depression symptoms. However, the loss of engagement of those who were lost to follow-up - who had slightly more symptoms - may be of concern. With limitations of this non-randomised, single-site study, the data suggests that cardiac rehab could be beneficial in managing 'cardiac blues'. Further research is indicated in exploring engagement and other additional psychological interventions beyond cardiac rehabilitation, but is inherently difficult because of the high loss-to-follow-up in this cohort due to drop-outs.

Developing a lifestyle behaviour intervention to improve cardiovascular health among women with a history of preeclampsia: What do they want?

Melinda Hutchesson[1], Vanessa Shrewsbury, Rachael Taylor, Lisa Vincze, Felicity Park, Linda Campbell, Robin Callister, Clare Collins

1. University of Newcastle, NSW, Australia

Background: Women with a history of preeclampsia have double the risk of cardiovascular disease (CVD) related morbidity compared to those without. Currently there are a lack of services addressing CVD health specifically for women with a history of preeclampsia. This survey aimed to evaluate the level of interest in participating in a lifestyle behaviour intervention to prevent CVD, and preferences for intervention delivery and content among women with a history of preeclampsia.

Methods: Australian women aged ≥18 years with recent preeclampsia (≤2 years) were recruited via social media to participate in an online survey. Participants were and asked to indicate their level of interest in participating in a lifestyle behaviour intervention to prevent CVD. Those interested were asked a series of closed questions regarding preferences for intervention delivery (e.g. delivery mode, intervention duration) and content.

Results: Of the 100 women who completed the survey, 96% were interested in participating in a lifestyle behaviour intervention to prevent CVD. Of that 96%, most were interested in nutrition (90.6%), exercise (86.5%) and weight management (83.3%) being a focus of the intervention. The preferred delivery mode was online (69.8%), followed by in-person (18.8%) and telephone (1%). Women reported they would be willing to participate for a mean of 17.6 weeks, and 5.3 hours per week.

Conclusions/Implications: Results of this formative research have been used to inform development of a web-based lifestyle behaviour intervention for women with a history of preeclampsia, which is currently being pilot tested.

Development of a Mediterranean diet knowledge questionnaire (Med-NKQ20)

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Background: There is good evidence that the Mediterranean diet can reduce the risk of secondary cardiac events. Although nutrition education is a core component of the Australian Cardiac Rehabilitation Association guidelines there are limited tools for clinicians to assess patient knowledge of the Mediterranean Diet.

Methods: A 20 item questionnaire (Med-NKQ20) was developed based on the literature and other nutrition knowledge tools and included question categories of: identification of Mediterranean foods, cooking principles, menu selection, label reading and key nutrients relevant to cardiac nutrition, such as sodium and fats. A Delphi survey method was used to refine the questionnaire and test content validity with experts in the field of cardiac nutrition and Mediterranean Diet. Participants were asked to rate their agreement on: the correctness of the supplied answer, the relevance of the question, and whether they would retain, delete or modify the question. A level of 70% agreement was set for each of the three domains.

Results: Respondents (n=10) demonstrated a >70% consensus on all 20 items on agreement of the answer supplied by the researchers. Most items were considered highly relevant (18/20) and eight items were considered to require modification. After modifying the original questionnaire and re-sending to participants, all three domains achieved >70% consensus in round 2.

Conclusions/Implications: A newly developed 20-item questionnaire of Mediterranean nutrition knowledge demonstrated good content validity. Repeatability and validation studies are planned to further assess this questionnaire and test its potential use for cardiac rehabilitation programs.

Differential changes to body composition in patients following completion of cardiac rehabilitation: impact of cardiac diagnosis

Helen Parker[1], Robert Zecchin, Lena Waldner, Robyn Gallagher

1. University of Sydney, NSW, Australia

Background: Cardiac rehabilitation (CR) is a standard program for all cardiac patients, one aim of which is to improve patients' body composition, such as reducing visceral adipose tissue (VAT). However, the influence of cardiac diagnosis on these outcomes in CR is unknown.

Methods: This cross-sectional study in patients attending a hospital-based CR program in Sydney, NSW, collected data regarding body composition (height, weight, waist circumference; body fat%, skeletal muscle mass (SMM) and VAT assessed by bioelectrical impedance) and aerobic fitness (treadmill Bruce protocol). Measurements were taken at program entry, completion, and at 6-months. Patients were grouped by primary cardiac diagnosis (STEMI/NSTEMI, CABG). Changes in body composition outcomes were analysed via repeated measures ANOVA.

Results: One hundred and ninety-three patients (61.5±11.3 years, n=162 (83.9%) males; STEMI/NSTEMI n=114, CABG n=79) had complete data. There were no differences in age, sex, or comorbidities (diabetes, hypertension, hypercholesterolaemia) between groups ($p>0.05$). Patients were similar at baseline for all outcomes except SMM and fitness (relative VO2max), which were lower in CABG patients. Repeated measures ANOVA revealed differential changes to body fat%, weight and BMI ($p<0.001$), VAT ($p=0.003$), and waist circumference ($p=0.033$) between groups, with STEMI/NSTEMI patients showing improvements and CABG patients generally showing detrimental changes in these outcomes over 6-months. Body composition changes did not appear to be influenced by improvement in fitness, which was similar between groups.

Conclusions/Implications: Patients completing CR have differential improvements in target outcomes based on their cardiac diagnosis. Patients may require tailored advice to assist in achieving the aims of CR.

Does silicone sheeting enhance sternotomy wound healing following cardiac surgery? A randomised controlled study.

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1. Cardiac Rehabilitation Unit, Caulfield Hospital, VIC, Australia

Background: There is a widespread belief that keloid scarring, and scar itch post-surgery can be prevented by the use of silicone sheeting. However, this is an expensive treatment option and previous studies of silicone sheeting on sternotomy scars have been poorly designed with susceptibility to bias. In addition, there have been no formal studies of scar management in Australian cardiac patients.

Objective: This study was conducted to evaluate the impact of silicone sheeting, compared with general wound care advice, on sternotomy wound outcomes following cardiac surgery.

Methods: A prospective, randomised, controlled, observer-blinded study was performed on 78 cardiac rehabilitation patients with recently healed sternotomy scars, who were randomised into either a treatment group (n = 42) with silicone sheeting (Mepiplex) or a usual care group (n = 36). The treatment group applied the silicone sheeting to their scars for up to six months post-discharge from rehabilitation. Scar assessments were performed at baseline and follow-up using the Patient and Observer Scar Assessment Scale (POSAS). Quality life and mood were also measured.

Results: There was no statistically significant difference in scar parameters between treatment and control groups in the POSAS ($p > 0.05$) categories. In particular, there was no difference between groups in aesthetic outcome using the patients' scores or observers' ratings. Quality of life, anxiety and depression were also equivalent in the two groups.

Conclusion: Silicone sheeting had no significant effect on the comfort, appearance and vascularity of sternotomy scars post-cardiac surgery. Patients have equally good outcomes with general wound care advice.

Establishing a practice gap to inform the implementation of more effective cardio-oncology clinical services: a retrospective audit examining the clinical management of patients with cardiotoxicity after cancer treatment.

Robyn A Clark[1], Tania Marin, John J Atherton, Julie Bradley, Jon Foote, Suchi Grover, Christopher C Karapetis, Robyn Peters, Bogda Koczwara

1. Flinders University, SA, Australia

Background/Aim: Cardiotoxicity can be a disabling consequence of cancer treatment. While multiple guidelines now exist, little is known about how well they have been translated into practice. The aim of this project was to describe the journey through the healthcare system of a group of patients with confirmed cardiotoxicity to establish baseline data for the implementation evidence-based practice.

Methods: Process-mapping methods were used to map patient assessment and management. Forty-six (n=46) cases were randomly selected from the echocardiogram databases of 3 large hospitals between 1979 and 2015. Consequently the 2012 European Society for Medical Oncology (ESMO) Clinical Practice Guidelines were used as the audit framework. In-depth interviews augmented audit findings.

Results: Mean age at cancer diagnosis was 53.3 years (range 6-89); 50% male; most frequent diagnoses breast cancer (30.4%) and non-Hodgkin's lymphoma (23.9%); mean chemotherapy cycles 5.2 (Range 1-18); reduced left ventricular ejection fraction in 89.1% with 10.9% cardiac ischemia or arrhythmia. Prior to chemotherapy, 41 (89.1%) patients had pre-existing cardiovascular disease. Thirty-nine (84.8%) participants had at least one modifiable risk factor and 12 (26.1%) = 4; 27(58.7%) were referred to cardiologist after diagnosis (only 5 (10.9%) were referred before chemotherapy). After treatment 22 (47.8%) patients were referred to a multidisciplinary heart failure clinics, 8 (17.4%) to cardiac rehabilitation, one to a cancer survivorship program and 10(27%) to a palliative care service. There were 16 (34.8%) deaths within the study group; 4 (8.7%) cardiac related, 5 (10.9%) cancer related and the remaining 7 (15.2%) were reported as 'other' including pneumonia and sepsis.

Of the 11 patients interviewed, 8 (72.7%) had been treated for breast cancer. No participant could clearly articulate their heart healthcare needs. They could not recall whether cancer professionals discussed the potential for cardiotoxicity with them prior to treatment, nor risk modification strategies. Cancer - Heart Failure fatigue and mild cognitive impairment were the most common impediments to undertake recommended lifestyle changes.

Conclusion: This audit demonstrates that the care of patients with cardiotoxicity after cancer treatment was variable and fragmented. Development of evidence-based models of care and clinical pathways to address this important problem is recommended.

Evidence-based interventions to increase time spent engaging in moderate to vigorous physical activity (MVPA) by people living in the community following a transient ischaemic attack (TIA) or non-disabling stroke

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Background: The risk of recurrent cardiovascular events within 5 years following a TIA is high. Clinical guidelines recommend that people who have experienced a stroke event can reduce recurrent stroke risk by participating in at least 150 minutes of MVPA each week.

Aims: Identify interventions which increase the time adults spend in moderate physical activity (MPA) or MVPA following a TIA or non-disabling stroke.

Methods: Two researchers independently reviewed citations retrieved from electronic database searches for studies which tested secondary prevention interventions for a TIA / non-disabling stroke population, and reported an outcome measure reflecting time spent in MVPA (i.e. self-report or objective measure).

Results: Only 2 of the 6582 studies retrieved met the inclusion criteria. Both were randomised controlled trials of moderate-high quality (PEDro Scale = 6/8) and reported change in MVPA measured by accelerometry. One study (n=77) testing a 24 week clinic-based exercise (60min) - education program, reported intervention participants increased time in MVPA (8.3 min/day) compared to a reduction in MVPA (-2.7 min/day) among control at program end. Study two (n=88) testing participation in a 24 week individualised exercise program (30 min/day) reported no significant effect on levels of MVPA at 3 months (0.3 min/day [-12.8 to 13.3]) or at program end (2.1 min/day [-10.7 to 15.0]

Discussion: Despite recommendations to participate in regular MVPA for secondary stroke prevention, there is very little evidence for effective interventions for the TIA or non-disabling stroke population. This review highlights the need for the development and testing of clinically feasible interventions that result in sustainable regular participation in MVPA.

Examining sex inequalities in the evidence for the management of acute coronary syndrome (ACS): an audit of Australian clinical guidelines

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Background: Women's elevated risk of morbidity and mortality following Acute Coronary Syndrome (ACS) may be, at least in part, related to their under-representation in the evidence on which clinical guidelines are based. An audit of US guidelines suggests they may not be sufficiently nuanced for female patients. We sought to conduct a similar audit of the 213 studies on which Australia's clinical guidelines for the management of ACS are based.

Methods: Data were extracted from 200 of the 213 papers included in the Guidelines, (excluding the 13 in the preamble).

Results: Of the 200 papers, 65% were primary sources, 19.5% were secondary sources and 15.5% were other sources. 69.5% mentioned sex/gender. Representativeness of the sample. Of those reporting the total number of participants enrolled, 50.5% reported % of women. 78% of studies reported sex ratio/% for the analytic sample. Representativeness in analytic approach. Of the papers with primary data sources, <1% included a statement of a priori power to detect sex specific outcomes. Of all papers (including meta analyses), 49.5% reported sex disaggregated data for exposure of interest, 18% reported sex disaggregated data for outcome of interest, and 22.5% used sex used in analytic models.

Conclusion: Less than 20% of studies included in the current ACS clinical guidelines reported sex-specific outcome data and less than 1% reported they were powered to do so. The lack of sex-specific evidence illustrates the urgent need for greater investment in CV research and funding, and publication policies that help to address these gaps.

Exercise-based cardiac rehabilitation and health-related quality of life of contemporary patients with coronary artery disease: a systematic review and meta-analysis

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Background: The magnitude of benefits from exercise-based cardiac rehabilitation (EBCR) for mortality and readmissions in acute coronary syndrome (ACS) patients have been challenged in patients receiving modern medical management, yet health-related quality of life (HRQoL) outcomes have been neglected. This systematic review evaluates the benefits of EBCR for HRQoL in this population.

Methods: Electronic databases: CENTRAL, MEDLINE, Embase and CINAHL, were searched from January 2000 to March 2019. Randomized controlled trials (RCTs) of EBCR versus a no-exercise control assessing HRQoL, reported in English were included. Screening and data extraction were done independently by two reviewers and entered into RevMan v5.3 for analysis using random effects model.

Results: Included studies (n=14) comprised 1,739 participants (mean age 56 to 77 years, males 81.1%). Five studies used SF-36 and two the MacNew Questionnaire and were suitable for meta-analysis. At six months, EBCR resulted in statistically and clinically significant improvements in physical performance (MD 7.09, 95% CI 0.08 to 14.11) and general health (MD 5.08, 95% CI 1.03 to 9.13), and statistically significant improvements in social and physical functioning, and mental health. At 12 months, physical functioning improvements were statistically and clinically significant (MD 9.82, 95% CI 1.46 to 18.19) and statistically significant for social functioning and bodily pain. Other studies included (but one) showed significant improvements in overall or at least one aspect of HRQoL.

Conclusions: Exercise-based CR improves key aspects of HRQoL in ACS patients receiving modern medical therapy, highlighting the importance of patient-reported outcome measures in evaluating the quality of CR.

Experience of cardiac rehabilitation in private sector Sri Lanka

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Introduction: Cardiovascular disease (CVD) is a preventable global epidemic which leads to the highest morbidity and mortality. Poor diet, smoking cigarette, alcohol and lack of physical exercise are potentially modifiable risk factors contributing the majority of CVD and deaths. Cardiac rehabilitation (CR) is demonstrated to be the cost-effective and efficacious in both high- and low-income countries, which could represent an important approach to mitigate the epidemic of CVD by addressing above risk factors through lifestyle modification. Thus, the objective of this study is to assess the short-term effects on behavioural, clinical and health improvements of CR programmes in private sector Sri Lanka.

Methods: A retrospective cross-sectional study was conducted for a period of ten months in the Center for Diabetes Endocrinology and Cardiac Metabolism (CDEM), Colombo. A total of 78 patients, ages between 30 to 75 years with a history of Ischemic Heart disease, percutaneous coronary intervention, coronary artery bypass grafting, heart failure with reduced systolic function, or patients with high risk factors for CVD were recruited. Pre-and post-test data, related to weight reduction and improvement of six minute walk, were compared using paired t-test and the statistical significance is considered as 0.001. Questionnaires were used to assess psychological status, Quality of life and CVD knowledge. Blood Pressure and target heart rates were measured during exercise training sessions. Pre and post programme HbA1c levels and LDL levels also obtained and compared.

Results: Following CR, body weight and 6-minute walk distance significantly improved (table 1). Short term improvements were observed for Behavioural changes (Physical activity, Nutrition, Smoking cessation, Medication adherence, Exercise), Clinical status (table 2), and health-related quality of life.

Conclusion and Recommendations: The purpose of this study is to share the experience of low-cost approaches to delivering the core components of CR, which could be proposed as the feasible and effective way in reduction of further complications associated with CVD. The findings of this study provide the first experiences reported in Sri Lanka towards the heart-healthy lifestyle and this will help to improve the accessibility and availability of the in- and outpatient CR programmes in other hospitals as well.

	Pre	Post
Body Weight (mean)	69.73 kg	67.65 kg
6 min walk test (mean)	545.13 m	687.32 m

	Target	Pre	Post
RHR	80%	----	100 %
LDL	<70 mg/dL	72%	76.92 %
HbA1C	<7%	78.2%	90%
SBP	<130 mmHg	93%	97.4 %
DBP	<80 mmHg	68%	89.5 %

Exploration of a Nurse Practitioner-led phase two cardiac rehabilitation program on attendance and compliance.

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Background: Despite strong evidence for the benefits of cardiac rehabilitation, attendance /completion rates remain low. Nurse practitioner-led services have been reported as more effective than physician-led services at increasing patient adherence to evidence-based recommendations. However, nurse practitioner-led programs are uncommon and there appears to be no current evidence examining the impact of these programs on attendance/completion rates.

Methods: A retrospective audit of the Country Access to Cardiac Health (CATCH) database was undertaken to identify patients who attended a nurse practitioner-led cardiac rehabilitation program between April 2014 and May 2016. Data from key performance indicators were exported to Stata/SE 15.0. The STROBE checklist was utilized to ensure quality reporting during this study.

Results: Seventy-seven percent (n=199) of participants were men and participants had a mean age of 67 years. Half (52.5%) of participants completed all CR sessions. Male participants (78%) were more likely to complete the CR program as compared with women (67%).

Participants with a family history of cardiovascular disease and a higher number of risk factors at baseline were more likely to commence and complete the program. Attendance and completion had a positive impact on smoking cessation.

Conclusions: The Nurse Practitioner-led program evaluated in this study demonstrated high levels of attendance and completion rates compared to standard programs. This high attendance/completion rate could in turn decrease the rate of subsequent cardiac events and improve mortality and morbidity rates.

Implications: Provides valuable insights into the effectiveness of nurse practitioner led cardiac rehabilitation and secondary prevention on attendance/complete rates. These findings could guide future research and clinical practice development.

Table 1: CR completion per referral diagnosis (n=199)

Referral diagnosis	Number (%) with each condition	Number (%) who completed all CR sessions	P value
ACS	62 (31%)	34 (55%)	**0.0214**
PCI (38 elective)	55 (28%)	23 (42%)	0.2273
Surgery (CABG)	35 (18%)	23 (66%)	**0.0002**
Surgery (valve)	20 (10%)	12 (60%)	0.0025
Angiogram with or without stent	11 (6%)	3 (27%)	0.2929
Chest pain	4 (2%)	0	0
Pacemaker	3 (1.5%)	2 (66%)	0.2427
Arrhythmia	3 (1.5%)	1 (33%)	0.6940
Heart failure	3 (1.5%)	0	0
CAD	2 (1%)	2 (100%)	**0.0477**
Other	1 (0.5%)	0	0
TOTAL	**199**	**100**	

p value: two sample test of differences in proportions (z scores); bold indicates p value ≤ 0.05

Table 3: People who commenced and completed CR according to risk factors (n=199)

Number of risk factors	Number (%) of people	Number (%) CR commencers	Number (%) CR completers	p value #
0	17 (8%)	6 (35%)	4 (24%)	0.7115
1	28 (14%)	16 (57%)	12 (43%)	0.4633
2	30 (15%)	16 (53%)	15 (50%)	0.8673
3	35 (18%)	19 (54%)	15 (43%)	0.5241
4	42 (21)	33 (79%)	24 (57%)	0.0742
5	37 (19%)	33 (89%)	23 (62%)	**0.0166**
6	8 (4%)	7 (88%)	5 (62.5%)	0.2901
7	2 (1%)	2 (100%)	2 (100%)	0
8	0	0	0	0
Total	**199**	**132**	**100**	

p value: two sample test of differences in proportions (z scores); bold indicates p value ≤ 0.05

Fitness, fatness and artery function in coronary heart disease

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Background: Endothelial function, measured by flow-mediated dilation (FMD) of the brachial artery, is a well-established indicator of vascular health. Similarly, aerobic capacity predicts cardiovascular and all-cause mortality. The aim of this study was to investigate the association between cardiovascular risk factors, and both arterial function and aerobic capacity in patients with coronary heart disease (CHD).

Methods: Fifty-one people with stable CHD underwent assessment of FMD, aerobic capacity (VO2peak), anthropometry (visceral adiposity and body fat percentage on DEXA), and blood profiles. Pearson's correlation coefficients were used to examine the relationships between factors. $P<0.05$ was considered statistically significant.

Results: Mean age was 67 ± 7 years (range 50 to 79), 80% male. Brachial artery FMD was negatively correlated with age (r= -0.285, p=0.04) and resting arterial diameter (r=-0.450, p=0.001). VO2peak (corrected for age and gender) was negatively correlated with triglycerides (r=-0.321, p=0.02), fibrinogen (r=-0.439, p=0.001), total plasma protein (r=-0.475, p=0.001), albumin (r=-0.335, p=0.016), waist circumference (r=-0.583, p=0.001), percentage body fat (r=-0.547, p=0.001), and visceral adipose tissue (r=-0.527, p=0.001) and was positively correlated with HDL (r=0.314, p=0.025).

Conclusions/Implications: This study highlights factors associated with arterial function and aerobic fitness in people with stable coronary heart disease that should be targeted in secondary prevention programs. The reduction of FMD with age emphasises the need to support older patients to optimise their artery health. The association between higher fitness, reduced visceral adiposity and improved blood profiles supports the inclusion of exercise in CHD management.

Health professional perspectives of the organisational barriers and facilitators to implementing meditation in heart disease clinical settings

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Background: Whilst meditation has been acknowledged by the American Heart Association for use in primary and secondary prevention, it is unclear how best to integrate meditation into heart disease secondary prevention programs to improve patients' physical and psychological health.

Aims: To understand health professional perceptions and experiences of organisational barriers and facilitators to integrating meditation into heart disease secondary prevention.

Methods: Descriptive qualitative study using semi-structured interviews. Clinicians were recruited through purposive and snowball sampling. E-mails were obtained from publicly listed profiles of cardiovascular and relevant health organisations between 18 May 2017 and 29 March 2018. Verbatim transcripts were thematically analysed to identify relevant themes within barriers and facilitators to implementation.

Findings: Eighteen participants (female n=11; male n=7), aged 40-60 years were interviewed. Barriers included the perception that meditation sat outside the existing health service structure, which was siloed and prioritised the delivery of medical care. The benefits of meditation were perceived as subjective, based on lack of definitive evidence in phase III trials. There was a perception that physicians did not accept the importance of meditation in heart disease secondary prevention, which influenced the lack of standardised referral pathways for cardiac rehabilitation. Facilitators involved successfully navigating organisational change, finding mutually beneficial outcomes, including leveraging key performance indicators, demonstrating cost-effectiveness and working with national cardiac rehabilitation and cardiology organisations to promote meditation research and practice.

Conclusion: Clinician engagement and support is required to strengthen the evidence regarding the role and relevance of meditation delivered in heart disease secondary prevention settings.

Heart Disease, hospitalisation and referral to COACH cardiac rehabilitation in Queensland

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Background: Heart disease has one of the highest mortality rates and contributes to significant morbidity, poor quality of life and health care costs in Australia, with an increasing burden by rurality, and for Aboriginal and Torres Strait Islander peoples. Cardiac rehabilitation (CR) improves health outcomes, and reduces costs, but access to services in rural and remote areas is limited. COACH is a Queensland Health home based telephone support CR program designed to fill this gap.

Aim/objective: To describe rates of hospitalisation and COACH referrals, for adults with heart disease in all Queensland and northern Queensland (NQ), by Aboriginal and Torres Strait Islander and non-Indigenous peoples.

Design: Descriptive retrospective epidemiological study: Queensland Health Patient Admission Data Collection (QHPADC) for adults hospitalised with heart disease and linked COACH data (01/01/2012-31/12/2016).

Main outcome measures: Queensland rates of hospitalisation for heart disease and COACH referral by Hospital and Health Services using relative risk (RR) and age standardisation for Aboriginal and Torres Strait Islander and non-Indigenous peoples.

Results: Queensland's Aboriginal and Torres Strait Islander peoples compared with non-Indigenous peoples have:

- greater risk of hospitalisation for heart disease than (RR 1.1), with higher rates for NQ.
- higher COACH referral rates with a high degree of unexplained variability throughout Queensland.

Conclusion: Aboriginal and Torres Strait Islander peoples are more likely to be hospitalised for heart disease and have higher rates of COACH referrals. However, it seems likely that hospitalisation and COACH referral rates should be higher, given higher morbidity rates and poor access to services.

High-intensity interval training within cardiac rehabilitation: findings from a feasibility trial.

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Background: Current ACRA guidelines recommend low- to moderate-intensity aerobic exercise within CR, and the majority of Australian sites (60%) recently surveyed reported applying this exercise intensity. High-intensity interval training (HIIT) within CR has been explored in recent proof-of-concept studies, including 2 large-scale multi-center international trials, with generally positive findings. However, concerns around patient safety and training sustainability still exist. Determining the optimal HIIT characteristics is important. This study assessed the feasibility of a novel HIIT protocol in patients with CAD within CR that was designed to balance patient safety, effectiveness and training sustainability.

Methods: Patients with CAD (N = 21) completed ~12 sessions (6-wks x 2 sessions/wk) of HIIT within outpatient CR. HIIT involved 15-20 repetitions x 30-seconds cycling at ~85-90% maximum heart rate, interspersed with 30-sec active recovery intervals. HIIT was assessed for patient safety (HIIT-related adverse events), effectiveness (change in cardiovascular-risk variables), and training sustainability (training enjoyment and adherence; change in affective state).

Results: No cardiovascular-related adverse events were reported in relation to HIIT. Patients showed improved aerobic fitness (mean +12%, +3.4 ± 2.3 mlO2/kg/min, p <.001), blood pressure (mean systolic -6%, -8 ± 7 mmHg, p <.001) and total body fat (mean -5%, -0.9 ± 1 kg fat, p = .001). Patient enjoyment of training was high (5.6 out of 7 using the Exercise Enjoyment Scale). Patient affective state improved (positive affect +2.5 ± 5 points, p = .035; negative affect -3.2 ± 7 points, p = .014; anxiety -1.7 ± 2 points, p = .006).

Conclusions: The HIIT protocol designed to balance patient safety, effectiveness and training sustainability appears feasible for patients with CAD within CR.

How much exercise is enough? Dose-response analysis of physiological load during exercise-based cardiac telerehabilitation

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Background: Exercise-based cardiac rehabilitation (exCR) improves patient-centred and clinical outcomes, but improvements are contingent on accumulating a sufficient exercise dose throughout a training intervention. Previous research exploring exCR dose-response relationships has often estimated dose from a priori exercise prescription protocols or summary workload data that may not accurately reflect the physiological demands accumulated during exercise. We used wearable sensors to record high frequency physiological data throughout a 12-week telerehabilitation intervention that enables high-fidelity analysis of dose-response relationships.

Methods: 82/162 participants were randomised (1:1) to receive a 12-week telerehabilitation program comprising individualised real-time remote exercise prescription, monitoring and coaching. A wearable sensor recorded high-resolution heart rate data throughout all exercise training sessions. Training Impulse (TRIMP) - an intensity level-weighted measure of physiological stimulus - was derived from heart rate data. Relationships between TRIMP and outcomes measures were assessed to determine dose-response relationships.

Results: Analyses are currently being conducted and results will be presented at ACRA ASM 2019.

Discussion: The use of high-resolution physiological data accurately measure the true exercise dose will improve estimates of relationships between accumulated physiological demands and subsequent health and functional outcomes. This could guide optimal individualisation and progression of exercise prescription during exCR.

Impacts of the introduction of same day discharge following percutaneous coronary intervention on length of hospital stay and outpatient cardiac rehabilitation attendance

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Background: Despite same day discharge (SDD) following percutaneous coronary intervention (PCI) being a safe discharge strategy, the information about how SDD influences length of hospital stay and outpatient cardiac rehabilitation (CR) attendance is limited. The aim of this study was to evaluate whether the introduction of SDD made impacts on length of hospital stay and outpatient CR attendance in a tertiary health service in southeast Queensland Australia.

Methods: A pre-post quasi-experimental study design was adopted. Data from outpatients who underwent PCI 6 months before (n=66) and 6 months after (n=82) the introduction of SDD were compared. Data from the hospital-based data repositories and CR databases were extracted. Descriptive and inferential statistical analyses were undertaken.

Results: During SDD implementation, 82 outpatients underwent PCI including 19 who were SDD and 63 who stayed overnight: SDD patients required 20.5 hours shorter in length of hospital stay and were less likely to attend outpatient CR program than overnight-stay patients (median 7.4 hours versus 27.9 hours; 31.6% versus 42.1%, respectively). When comparing with baseline data, patients in the post-introduction group spent 1.6 hours shorter (median 27.0 hours versus 28.6 hours) and had a lower rate of outpatient CR attendance (46.9% versus 58.1%), although the former was statistically significant and the latter was not.

Conclusion and implications: The results suggest that a substantial number of patients who have SDD would be required to make a meaningful impact on length of hospital stay. Strategies might also be needed to improve outpatient CR attendance for SDD patients.

Increasing the uptake of cardiopulmonary resuscitation training within Australian cardiac rehabilitation programs: a randomised implementation study.

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Background: Cardiac Rehabilitation (CR) participants are at increased risk of cardiac arrest yet provision of cardiopulmonary resuscitation (CPR) training in Australian CR programs is low (24%). We aimed to identify the best strategy to implement CPR training into CR programs.

Methods: A two-arm randomised implementation study was conducted. One CR coordinator/program was randomised 1:1. All coordinators received an information pack (control) with the intervention arm receiving an additional face-to-face education session. Coordinators were followed up at 6-months.

Results: 36 programs (61% metro, 78% public, 64% hospital-based) were randomised (control = 18, intervention = 18). Three programs withdrew and are excluded from the analysis. Few programs (12%) had offered past CPR training and only 18% currently included CPR information. At baseline, common barriers to providing CPR training were time (69%), resources (69%) and a lack of awareness (19%); however most coordinators (78%) believed that CR participants are interested in learning CPR. Of the 22 programs (10 intervention) to complete the study to date, 64% have incorporated CPR training into their programs (60% intervention, 67% control). Time was the most common barrier (73%) to implementation. Qualitative interviews with coordinators revealed staffing, the responsibility of conducting CPR training and a reluctance to change were additional barriers.

Conclusions: CR represents a logical location to provide targeted CPR training to high-risk cardiac groups at scale nationally. This study will aid understanding of how CR coordinators can be supported to enable programs to incorporate new educational interventions such as CPR training.

Incremental yield of repeating annual ECG screening over 4 years in a Japanese population without prior atrial fibrillation

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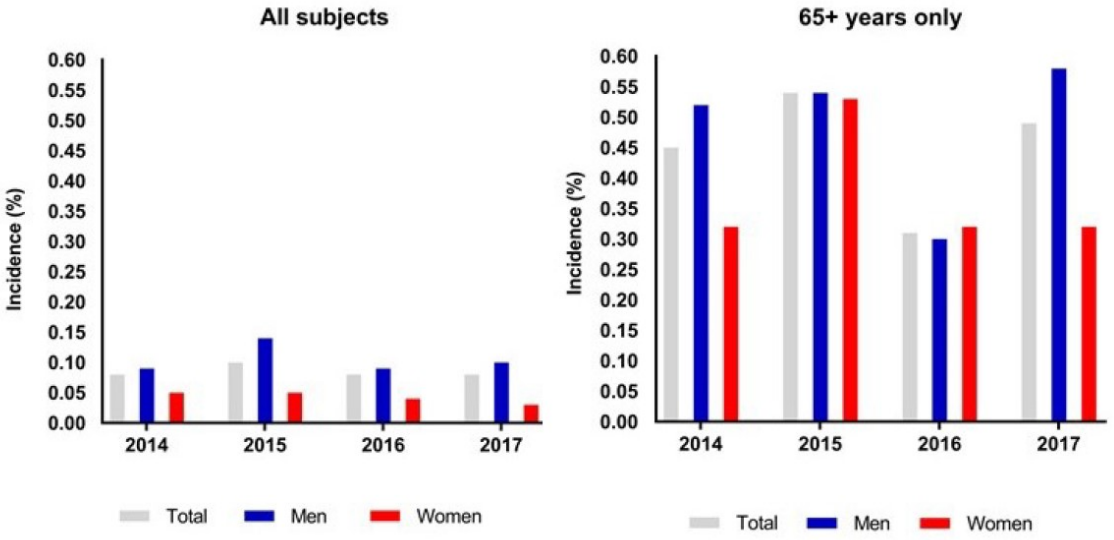
Background: Opportunistic screening for atrial fibrillation (AF) is recommended in international guidelines to prevent stroke, but incremental yield of repeat annual screening is unknown. We investigated incremental yield and stroke risk of new AF identified through 4-years annual screening.

Methods: Hokuriku Health Service Association, Toyama, performs annual health examinations on workers and their families. Data was retrieved for 141,441 health examinations from 2014. Subjects with prior ECGs in 2012+/-2013 were included. All subjects had annual ECGs from 2014-2017. The annual incremental detection rate for new AF was determined and stratified according to gender and age-groups. Estimated CHA2DS2-VASc scores (without heart failure data) were calculated.

Results: In 2014, 88,336 subjects had an ECG (46.8±12.5 years; 64% male): identifying 346 (0.39%) known AF, and 69 (0.08%) new AF. Incidence of new AF increased with age from 0.01% (<50 years) to 1.0% (=75 years); and was higher in males (0.09%) than females (0.05%). Annual ECG screening over 4-years identified a consistent new AF yield 0.08%-0.10% (0.3-0.54% =65 years) (figure). Oral anticoagulation was recommended (i.e. CHA2DS2-VASc score =2 males, =3 females) in 39% of all new AF cases, and 84% aged =65 years.

Conclusions: Annual ECG screening provides a consistent yield of new AF. The majority of new AF (=65 years) are eligible for OAC for stroke prevention. Although AF prevalence and incidence are lower in Japan than Western countries, 2,316 new cases would be identified in Toyama prefecture each year.



Inter organisation collaboration targets country health professionals in Western Australia (WA): utilising telehealth to provide support and education

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Background: Opportunities for clinical education are limited in rural and remote country areas. There is a specific need to increase confidence, knowledge and skills across all health disciplines in the area of Cardiac Rehabilitation and Secondary Prevention (CRSP) in WACHS.

Methods: Following a needs assessment to identify topic areas and preferred style of presentation delivery, two WA Health Department services and two peak body non-government organisations collaboratively planned and developed a program of monthly interactive telehealth CRSP professional development. The one-hour presentations were recorded for viewing via the TRACS WA's website.

Outcomes: Over 66 sites have been engaged throughout Western Australia from Kununurra in the north to Esperance in the south. 183 multidisciplinary clinicians, predominantly nurses and physiotherapists from public, private, acute care, primary health, and Aboriginal Health Services have attended one or more videoconference session delivered from the State Telehealth Service in Perth since August 2018. Attendees completed an electronic survey after each event. Feedback suggests that access to professional development remotely using multimedia technology, supplemented with resources and opportunities for mentorship, enhances clinician's knowledge and confidence in the delivery of CRSP services in WACHS.

Implications for practice: Professional development opportunities for rural and remote clinicians must be easy to access, targeted and relevant to the environment in which the service is delivered.

Conclusion: Interagency communication, collaboration and cooperation can improve access to clinical education and is important to facilitating a flow on effect to patient care for those living with cardiac disease in rural and remote WA.

Intimacy and sex after a heart attack: Australian health professionals' current attitudes and practice

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Background: Heart attack survivors experience physical, psychological and social challenges that can impact their quality of life. A 2014 Heart Foundation survey found 55% of heart attack survivors had not spoken to a health professional (HP) about sexual activity after their event or been provided with related information. Research suggests sexual health support and counselling by HPs may be beneficial in addressing sex and intimacy issues. This research explored current attitudes, practices and resource needs of Australian HPs in addressing sex and intimacy with heart attack survivors.

Methods: An online survey was distributed to Australian HPs which comprised items related to HPs' current attitudes and practices in addressing sex and intimacy with clients post-heart attack, as well as HPs' resource needs. Descriptive statistics were used to analyse quantitative data and thematic analysis of qualitative data.

Results: A total of 251 multi-disciplinary HPs completed the survey with the majority being nurses (56%). The majority were female (86%). HPs felt it was important to discuss sexual activity (87%) and intimacy (85%) with clients after heart attack, however, less than one quarter reported discussing sex (24%) or intimacy (22%) with their clients regularly or all the time and less than half initiate the discussion. General practitioners, cardiac rehabilitation specialists, cardiologists or a counsellor/therapist were reported as best placed to discuss sex or intimacy with heart attack clients. HPs report being more comfortable discussing sexual activity and intimacy with females and less comfortable with patients from different cultures and backgrounds. HPs reported being confident with the sex (62%) and intimacy (49%) advice they provide; however, practice challenges included limited time to talk with patients, lack of protocols to guide discussion and inadequate consumer support resources.

Conclusion/Implications: These research findings are consistent with other research. Whist the majority of HPs report it as important to discuss sex and intimacy with clients after a heart attack, and approximately half are confident to discuss, few do so regularly as part of their practice. Resourcing and support materials need to be considered in the provision of services to support the health and wellbeing needs of heart attack survivors.

Is it the nurse or the APP?

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Rationale: Cardiac Rehabilitation (CR) is an evidence-based intervention combining exercise and individual education for patients with heart disease. Despite well-known benefits of CR, there are significant numbers of cardiac patients) who do not attend or complete their rehabilitation program. There a myriad of reasons for this - social, physical, psychological and access to appropriate flexible services, particularly in the rural areas. Smart Applications (APPs) have demonstrated similar outcomes to traditional group programs for patients choosing them as an alternative model for CR. Many APPS use a combination of APP and nurse support and it is unknown if it is this combination or nurse support which improve patient outcomes.

Method: Outcomes will be compared for patients with Acute Coronary Syndrome (N=30) who choose an APP (CARDIHAB) and nurse support for their CR, as opposed to those who choose structured telehealth coaching(N=30).

Outcomes: The NSW Cardiac Rehabilitation Minimum Data Set will be utilised for comparison of participant outcomes. Clinician satisfaction will be reviewed for acceptability and feasibility of using an APP in cardiac rehabilitation practice.

Implications for practice: This project has the potential to inform on the real-world use of APPS in cardiac rehabilitation practice.

Conclusion: Recent research suggests use of smart applications improves cardiac rehabilitation access and outcomes. This project seeks to identify what influence the cardiac rehabilitation nurse has on patient outcomes with and without an APP.

Keeping on Track: Exploring the activity levels and utilization of healthcare services of patients in the first 30-days after discharge from hospital for patients with Acute Coronary Syndrome.

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1. Flinders University, SA, Australia

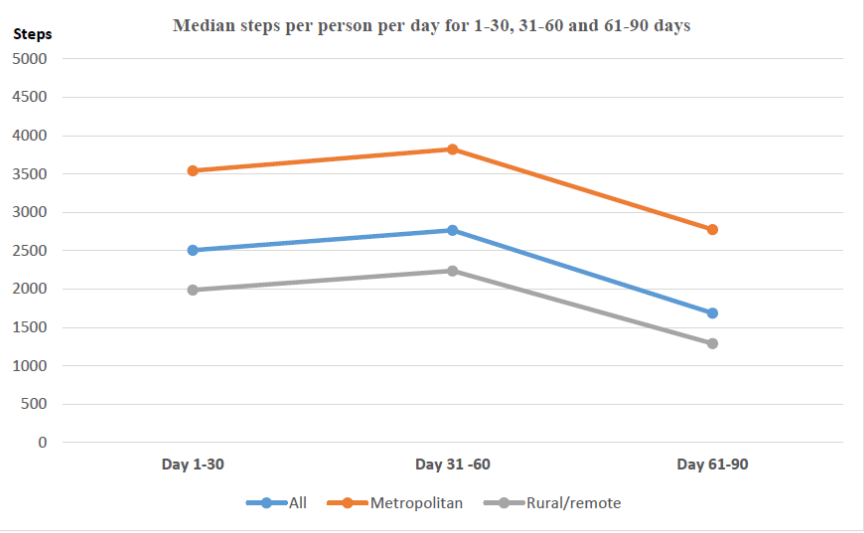
Background/Aim: Understanding and improving modifiable factors associated with readmissions in the first 30 days after discharge for Acute Coronary Syndrome (ACS) patients is crucial. The aim of this pilot study was to investigate the impact on activity levels and healthcare utilization of bedside discharge education and activity trackers on patients with ACS.

Methods: Knowledge recall tests and objective, quantitative activity data were collected by global positioning systems (GPS) using two apps carried on a mobile phone. Participants were asked to carry tracker apps for 30-90 days.

Results: Eighteen participants were recruited (6 metropolitan 12 rural) mean age 55 years, 83% male, 72% were overweight or obese (BMI >25 kg/m2) and current or previous smoker, 61% STEMI. Recall of discharge education included testing knowledge of their condition 100%, angiogram 40%, comorbidities hypertension 40% and diabetes 100%. 87% adhered to using the technology. In the 30 days post discharge; median steps per day were 3027 ±369 (only 1 participant completed 10,000 steps), 62% visited GP, 16% attended cardiac rehabilitation, 16% visited cardiologist, 72% pharmacist, 27% visited emergency department for cardiac event, and 61% pathology service (blood tests). Managing Big Data from the apps was a challenge with 153,000 lines of raw data cleaned to 45,577 data points for analysis.

Conclusion: This pilot study was an example of the application of data from the real world to help understand post ACS discharge patient activity. Rates of access to services in the first 30 days after discharge continues to be of concern and geography may not be the problem. Lessons learned from this study will inform a larger funded project.

Figure 1 Global Positioning Systems (GPS) activity tracker data of activity levels in the first 30-days after discharge from hospital for patients with Acute Coronary Syndrome.



Low health literacy predicts emergency department visits and self-rated health in first-generation Chinese immigrants with cardiovascular disease

Ling Zhang[1], Melody Ding, Lis Neubeck, Robyn Gallagher

1. The University of Sydney, NSW, Australia

Background: Emergency department (ED) visits and self-rated health are important indicators of health and are worse in lower health literacy (HL). However, this relationship is poorly understood among immigrants, whose HL is often worse due to linguistic and cultural barriers. This study aimed to determine the relationship between HL, ED visits and self-rated health among first-generation Chinese immigrants.

Methods: Participants (n=90) from Chinese communities across NSW born in mainland China, Hong Kong, Macau, and Taiwan were surveyed for HL, ED visit in the past 12 months, and self-rated health using the Health Literacy Questionnaire. Data were analysed using logistic regression.

Results: Participants were 71 (SD:10) years old and 71% were female (n=65, 71%), and 96% born in mainland China. One third had ED visit in the past year and 90% rated their health as fair/poor. More than 80% reported inadequate HL for accessing health information and navigating the healthcare system.

ED visits were independently associated with lacking both healthcare providers' support (OR:3.14, CI: 1.13 - 8.75, p=.028) and social support (OR:3.75, CI: 1.37 - 10.24, p=.010) after adjusting for age, gender, years in Australia, education and employment status. Participants having insufficient health information were much more likely to rate their health as fair/poor (OR:7.31, CI: 1.00 - 53.18, p=.050).

Conclusion: Chinese immigrants with CVD are at risk of inadequate HL and higher prevalence of ED visits and poor self-rated health. Improving key areas of HL may potentially optimize health and healthcare utilization.

Management of iron deficiency in ambulatory chronic heart failure patients: what role does proton pump inhibitor use play?

Dwaraka Rajan[1], Jessica Rossetti, Vineeth Rajan, Debra Gascard, Bruce Jackson

1. Monash Health, VIC, Australia

Background: International heart failure (HF) guidelines recommend treatment of both functional and absolute iron deficiency (ID) in patients with HF with reduced ejection fraction (HFrEF) with intravenous ferric carboxymaltose (FCM), irrespective of anaemia status. The significance of proton pump inhibitor (PPI) use on iron status in this population is unclear.

Purpose: To assess adherence to ID best-practice management guidelines and use of PPI was analysed in patients who attended an ambulatory complex HF program.

Methods: We retrospectively reviewed medical records of patients who attended an ambulatory complex HF program between January 1 and June 30, 2017. Data regarding PPI use, and anaemia and ID status, were collected.

Results: Iron studies were ordered frequently, however best practice guidelines for management of ID was not observed in all cases (Table 1). Intervention was greater in anaemic patients with absolute ID (78%) compared to those with preserved haemoglobin (15%) or functional ID (33%).

PPI use in the HFrEF population was common (n=37, 62%). Patients on PPI had a higher ID prevalence of 81% compared to 61% in patients who were not on a PPI. All patients on double dose of PPI had ID (n=5).

Conclusion: Case detection and best practice treatment for ID is now a point of emphasis in our program. PPI may be a contributing factor for ID in some cases.

Results

Table 1: Management of ID in HFrEF patients

	HFrEF (n=60)	
	Anaemic (n=21)	**Non-anaemic (n=39)**
Iron studies, n	21	35
Iron deficient, n	18	25
Absolute, n	9	13*
Treated, n(%)	7(78)	2(15)
FCM, n(%)	2(22)	2(15)
PPI, n(%)	8(89)	9(69)
Functional, n	9	12
Treated, n(%)	3(33)	0(0)
FCM, n(%)	2(22)	0(0)
PPI, n(%)	6(67)	6(50)

*One patient was lost to follow-up

Measuring cardiac rehabilitation service effectiveness in Australia

Carolyn Astley[1], Emma Thomas, Robert Zecchin, Rachelle Foreman, Steven Woodruffe, Cate Ferry, Robyn Gallagher

1. Health Translation, SA, Australia

National and international guidelines recommend referral to cardiac rehabilitation (CR) for all eligible patients. Despite the evidence, referral rates in Australia remain poor (30-45%) and once referred, attendance and completion rates remain low (20-60 %). However contemporary Australian data on referral, attendance and completion rates are lacking and CR services also vary widely in terms of program content, structure and delivery. Measuring the quality of CR services can improve patient experience and outcomes and aggregated data from multiple health services can support bench-marking, monitor service effectiveness and identify areas for improvement.

In 2018, Health Translation SA, ACRA and the National Heart Foundation jointly hosted a national Think Tank to share state/territory-based activities on measuring the effectiveness of CR services and begin developing a set of national quality indicators. Attendees included consumers, clinicians, researchers, data experts and health and policy leaders representing all states and territories. An outcome was the establishment of a CR Taskforce to develop national quality indicators for CR.

In 2019 the CR Taskforce has developed a set of 11 in-principle, expert, consensus-based quality indicators and compiled a data dictionary of standard definitions for each quality indicator, their meaning and allowable values. The Taskforce will undertake consultation seeking feedback from stakeholders to finalise the quality indicators and develop and implement an advocacy plan to influence and inform endorsement, dissemination and implementation.

The benefits of expert collaborations to discuss, communicate and gain consensus cannot be underestimated in progressing important national initiatives.

Moving cardiac rehabilitation to the sporting heart of a town to increase attendance

Roschelle Brown[1]

1. Barwon Health, VIC, Australia

Background: Prior to 2018 cardiac rehabilitation at Geelong hospital was outdated, with minimal data collection and loose adherence to best practice guidelines, which resulted in poor attendance. The aim was to increase client attendance and completion rates.

How: New staffing and management structure allowed the program to have dedicated team of clinicians, including a care coordinator, exercise physiologist and rehabilitation physician. The focus was delivering a timely, individualised, flexible and evidence-based program, supported by benchmarking with other programs. The option of a home-based program delivered by mobile phone application was also made available.

We decided to facilitate the program in a non-clinical, accessible, client friendly location, Kardinia Park, the home of the Geelong cats AFL team. Extensive data collection, evaluation and outcome measures were set up to ensure program would meet client needs and efficiency of the program could be measured.

Outcomes: During the first six months of service over 84 % of eligible clients attended the program and over 90 % of clients completed their program. On average clients are contacted within 3 days of referral being received, assessed within 9 days and commencing the program within 17 days from discharge. Clients preference is a facility-based program due to social support and expert staff.

Summary: A well designed program can have a dramatic impact on attendance and completion rates. Data collection reflects success and barriers to a program and can be used to deliver information to ensure ongoing managerial support and expansion of the program.

Not all physical activity has equal effects on health: the key role of leisure time physical activity

Helen Parker[1], Melody Ding, Lin Perry, Robyn Gallagher

1. University of Sydney, NSW, Australia

Background: Physical activity is an important behaviour to prevent poor health and cardiovascular disease, however, it is not known whether benefits differentially arise from leisure or occupational related activity.

Methods: Nurses working in NSW (n=4343) were surveyed for physical activity, which was categorised into : High Leisure, High Work activity (HLHW), High Leisure, Low Work activity (HLLW), Low Leisure, High Work activity (39.9%), and Low Leisure, Low Work activity (40.2%) and analysed against health (self-rated, = 3 sick days) using multiple regression.

Results: Participants' mean age was 47.9±11.4 years, 88.5% were female. Cardiovascular disease most often occurred in LLLW 24.2% versus HLHW 12.95%, HLLW 13.4% and LLHW 17.8% (p<.001). Most participants were in the lowest activity category for leisure regardless of their work activity: LLLW (40.2%) and LLHW (39.9%), HLHW (10.3%), HLLW (9.6%).

Clear patterns of association were evident for context of activity and health (figure 1). High leisure physical activity was independently associated with better self-rated health (ß=0.44; 95%CI 0.37, 0.50) and fewer sick days (ß=0.78, 95%CI 0.67, 0.92) whereas high work physical activity was associated with more sick days (ß=1.19, 95%CI 1.03, 1.37) after adjusting for age, gender, BMI, carer, work hours, shift work and chronic disease.

Conclusion: Strategies are needed that promote and reinforce the need for leisure time physical activity for health independent of any occupational physical activity.

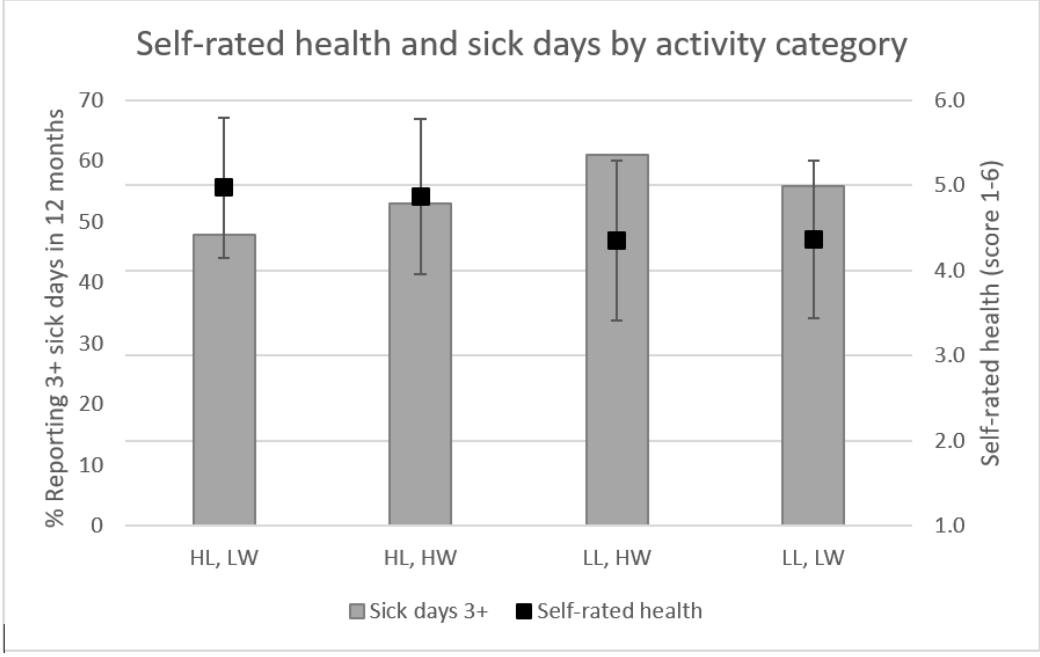


Figure 1. Self-rated health and proportion of workforce taking 3+ sick days in the previous 12 months by leisure and work activity category.

Nutrition education in outpatient cardiac rehabilitation: A protocol for change

Lucy Kocanda[1], Jane Kerr, Tracy Schumacher, Julie Rutherford, Jennifer May, Megan Rollo, Leanne Brown

1. University of Newcastle Department of Rural Health

Background: Current approaches to nutrition education within cardiac rehabilitation (CR) in the Hunter New England Local Health District (HNELHD) are largely didactic interventions to improve nutrition knowledge. Evidence suggests approaches that seek solely to improve nutrition knowledge or skills are not likely to be effective. Interventions that link appropriate behaviour change theory with practice are required to support longer-term dietary behaviour change in CR patients. This project aims to improve nutrition education and behaviour change outcomes in outpatient CR within the HNELHD.

Proposed methods:

Population: Patients and clinicians in outpatient CR services within HNELHD.

Intervention: This multi-component research project, currently in development, will involve collaboration between university researchers and CR clinicians. The project will employ knowledge translation methods and behaviour change theory, with project components including:

- A survey of HNELHD CR co-ordinators to determine current nutrition education practices and perceived importance of nutrition in CR.
- Collaborative design of a novel nutrition intervention for CR, based on current nutrition evidence and behaviour change theory.
- Pilot testing of the intervention at four rural sites within the HNELHD.

Outcome measures: as per CR core component recommendations

Primary: change in dietary pattern

Secondary: knowledge retention, referral to dietitian, weight, waist circumference

Implications for practice: Lifestyle changes, including those relating to diet and nutrition, have the potential to improve cardiovascular risk profile. If programs can facilitate lasting nutrition related behaviour change, the implications for CR and general health are significant.

One Stop Data Shop-Implementing a comprehensive & multi-purpose data collection tool into our cardiac rehabilitation program.

Lisa Sammartino[1], Ms Nicole Dixon, Jackie Hamilton

1. IPC Health – VIC, Australia

Cardiac rehabilitation programs need to keep track of performance and make improvements. An issue is the difficulty in collecting and collating all the data we require to meet our key performance indicators. Our Community Health Centre does not have strong IT support or resources.

We needed one simple data collection tool that we could extract information from on demand. With a lot of patience, hard work and help from our student, a solution was developed using 'Microsoft Excel'. We began the formulation of our Cardiac Rehabilitation data sheet in a shared drive, showing monthly statistics and yearly summaries. The Data entered included core components of Cardiac Rehabilitation and extra information we were keen to investigate.

Now we have real time entry and statistics on demand. Graphic demonstration of statistics can be almost immediate. We have had many surprising outcomes from our now comprehensive data sheets. One of these was the discovery that the reason for many of our 'Did not attends' was that the clients had returned to work. Meeting this challenge has increased the uptake of our cardiac rehabilitation program to 65%. Another outcome has been the improvement of our program when our statistics showed us new trends in client diagnoses.

Oxygen as a training tool in prehabilitation for heart and lung transplant: effect on repeat room air 6- minute walk test.

Kim Gray[1]

1. Austin Health, VIC, Australia

Background: There is limited published evidence on the benefits of prehabilitation prior to heart and lung transplant and in the use of oxygen in training the hypoxic patient not on long term oxygen therapy (LTOT).

Method: Case study of a 42-yo male for prehabilitation awaiting heart/ lung transplant, presenting with resting hypoxia and not considered for LTOT due to right-to-left shunt. 6-minute walk tests (6MWT) were completed at commencement and 2 months on RA as not on LTOT.

Case review demonstrated no change in shunt size or pulmonary artery pressures associated with clinical deterioration but increase in size (7cm-10cm) of a pulmonary artery aneurysm compressing the left main bronchus. It was decided use oxygen to control desaturation, heart rate and perceived exertion to allow for progressive aerobic training. Training was undertaken on 5l/minute O2. Continuous exercise training progressed from 15minutes each stationary bike and treadmill to 30minutes each stationary bike and treadmill, training twice a week for two months.

Outcomes: Endurance training on oxygen translated to improvements in repeat room air 6MWT distance, resting and peak heart rate, resting and lowest oxygen saturation and BORG. There were self- reported improvements in performance of community activities of daily living.

Clinical implications/Conclusion: Prehabilitation should be considered while awaiting heart and lung transplant if considered safe. Oxygen should be considered to assist tolerance of training as well potential for functional translation even if not on LTOT.

Results

	6MWD (m)	Rest SpO2 (%)	Rest HR (bpm)	BORG Dys	RPE	SpO2 low (%)	Peak HR (bpm)
Pre	461	70	90	5	7	52	132
2mth	524	72	78	4	4	55	117

Prevalence and patterns of cognitive impairment in acute coronary syndrome patients: a systematic review

Emma Zhao[1], Nicole Lowres, Anna Woolaston, Sharon Naismith, Robyn Gallagher

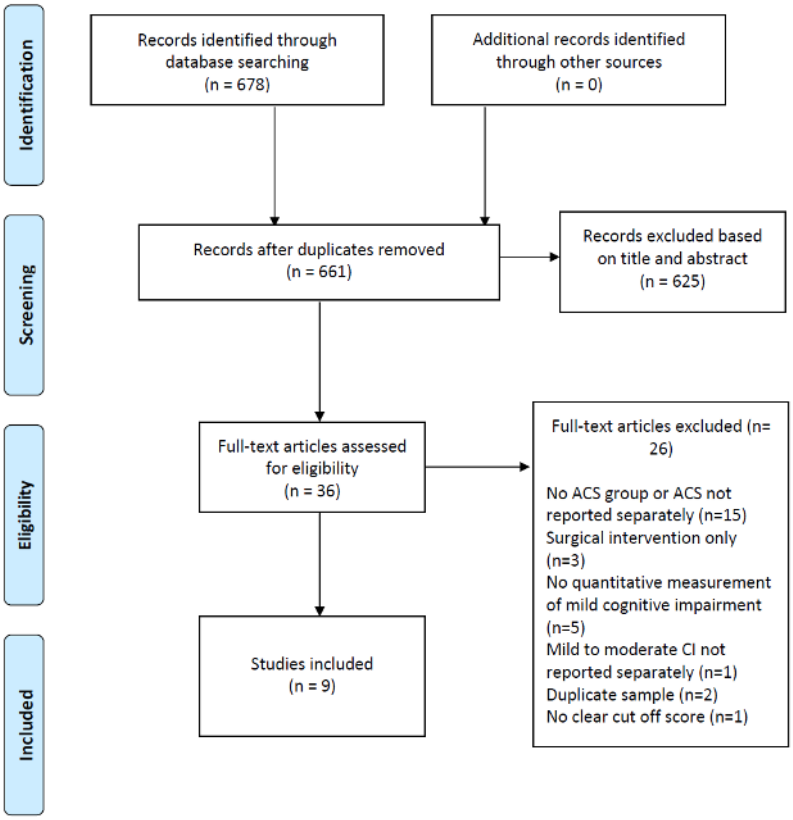
1. University of Sydney, NSW, Australia

Background: Changing risk factors, lifestyle and behaviour are challenging for patients following Acute Coronary Syndrome (ACS), and Cognitive Impairment (CI) is a potential contributing factor, however, CI prevalence is poorly understood due to lack of routine screening in these patients. This study aimed to investigate the prevalence of CI in ACS patients and the specific domains affected.

Methods: A systematic review was conducted of electronic databases in March 2019, to identify studies reporting CI prevalence in ACS patients. Studies of patients with diagnosed dementia or revascularisation were excluded.

Results: From 678 potential studies, nine were included. The total sample size was 6,457, mean age range was 51.3-77.4 years, and 57-100% were male. Reported CI prevalence rates varied substantially (9%-85%) with no clear pattern over time. Two studies examined domains, verbal fluency and language were affected the most. Meta-analysis was not feasible due to variation in screening tools (n=8), cut-off scores, and screening timepoints.

Conclusions: CI in ACS patients is currently poorly described, and likely affects a substantial number of ACS patients who remain undetected and have the potential to develop to dementia in the future. As verbal and language domains are most affected, this could impact understanding and retention of health education. Research is needed to accurately define the prevalence of CI in ACS patients; and identify a clinical screening tool, that is sensitive, domain focused, and has standardised cut-offs.



Prevalence and predictors of depression and anxiety in a cardiac rehabilitation population and its impact on adherence

Angela Rao[1], Robert Zecchin, Phillip J. Newton, Jane L. Phillips, Michelle DiGiacomo, Alan R Denniss, Louise Hickman

1. University of Technology Sydney, NSW, Australia

Background: Co-morbid depression and anxiety symptoms are frequently under-recognised and under treated in heart disease and negatively impact adherence to medications and recommended lifestyle changes.

Aims: To determine the prevalence, characteristics and predictors of anxiety and depression in adults attending cardiac rehabilitation (CR), the impact of CR on moderate psychological health symptoms, and the relationship between moderate psychological health symptoms and CR adherence rates.

Methods: Retrospective cohort study including 5908 CR program participants at Westmead and Auburn hospitals, Sydney from 2006-17. Variables included demographics, diagnoses, cardiovascular risk factors, medication use, participation rates, health status (MOS SF-36) and psychological health (DASS-21) subscale scores.

Results: Moderate anxiety, depression or stress symptoms were prevalent in 28%, 18% and 13% of CR participants respectively. CR program adherence was significantly reduced in adults with moderate depression (24% vs 13%), anxiety (32% vs 23%) or stress (18% vs 10%) symptoms compared to those with normal-mild symptoms ($p<0.001$). Anxiety (Odds ratio (OR) 4.395; 95% CI 3.363-5.744 $p<0.001$) and stress (OR 4.527 95% CI 3.315-6.181 $p<0.001$) were the strongest predictors of depression. Depression (OR 3.167 95% CI 2.411-4.161) and stress (OR 5.577; 95% CI: 4.006-7.765; $p<0.001$) elevated the risk of anxiety on entry by more than three times, over and above socio-demographic, lifestyle factors, diagnoses and quality of life.

Conclusion: Monitoring depression and anxiety symptoms on entry and during CR can assist to improve adherence and identify the need for adjunct psychological health support. Investigating the relevance and use of psychological support strategies within CR programs is justified.

Providing education to Chinese-speaking patients: perceptions and experiences of Australian cardiac nurses

Jialin Li[1], Fung Kuen Koo, Nicole Lowres, Robyn Gallagher

1. University of Sydney, NSW, Australia

Background: Chinese immigrants have limited cardiovascular disease knowledge, which impacts self-care. There is limited research on communication and education strategies for Chinese-speaking cardiac patients. We therefore sought to identify key communication influencers from the cardiac professional's perspective.

Methods: Practicing cardiac nurses supporting Chinese-speaking patients were recruited to participate in semi-structured interviews using open questions. Interviews were transcribed verbatim, and thematic analysis performed.

Results: Eleven nurses were interviewed (male=4, female=7); one spoke basic Chinese and two were fluent. Nurses consistently reported uncertainty about providing education. The most discussed themes were: 1. lack of Chinese proficiency which prevented preferred direct communication; interpreter usefulness limited by time constraints, quality variations, and mismatch between nurse-interpreter expectations and communication styles; 2. lack of shared cultural beliefs and mismatched expectations of family influence; family was valued for interpreting day-to-day conversations but perceived as barrier to information flow in treatment negotiation and full disclosure; limited cultural insight hindered nurses' effort to develop tailored approach to discussing taboo subjects of mental illness and death; patients ambivalent to Western health information, especially towards dietary education; 3. current communication resources lacked specific content and not culturally relevant.

Conclusion: Nurses felt uncertain providing cardiac education due to inability to directly communicate and limited cultural insight to appropriately discuss sensitive topics, and current resources not supporting their needs. Research is needed to address the content specificity and cultural relevance of communication resources.

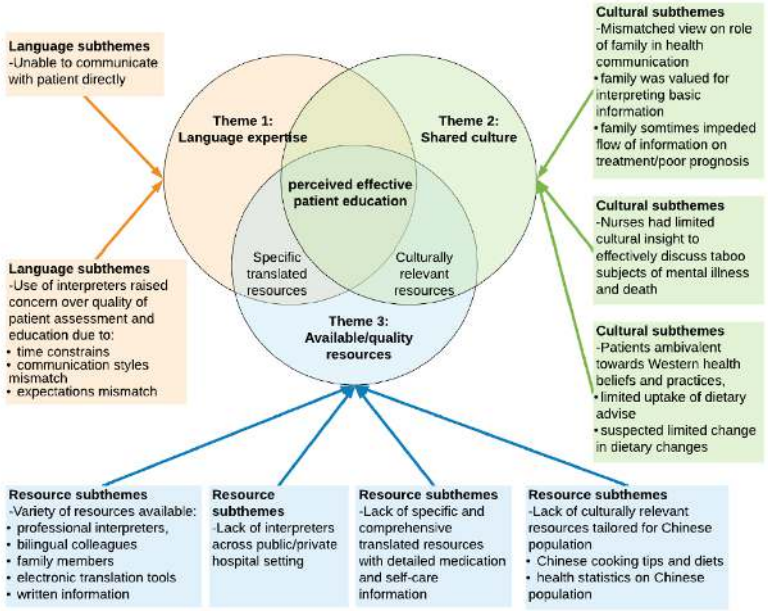


Figure 1. Concept map of themes and subthemes

Returning to commercial driving after a cardiac event

Daniele Day[1], Nina Jorgensen

1. West Moreton Hospital and Health Service, QLD, Australia

A lack of clarity existed in our Cardiac Rehab Service relating to the process commercial drivers with a new onset cardiac condition needed to undertake to return to commercial driving. Making appropriate and timely referrals was challenging for the majority of staff as the process was unclear and not documented. Prior to the project written client education information didn't cover commercial driving aspects directly. Commercial drivers recovering from a cardiac conditions were often under financial and social pressure to get this process completed as soon as possible in order to return to work.

With the assistance of an 80 hour project placement Occupational Therapy student (Nina Jorgensen) from Australian Catholic University, we set about clarifying and streamlining referral processes for medical clearance to return to commercial driving within our health service district. To map the current process and identify areas for improvement we liaised with key stakeholders such as our Cardiac Rehab Service nurses, Occupational Therapists specialised in driving rehabilitation, Qld Transport, public and private cardiologists, our Clinical Measurements service, Exercise Physiologists, and clients of our Cardiac Rehab Service who were commercial drivers.

Through this process we developed client handouts on return to commercial driving within out district after a cardiac event, a staff information tip sheet on return to commercial driving after cardiac events, and hosted an educational presentation to staff on the project the process of returning to commercial driving after a cardiac event in our district. We have since expanded the scope of this project to develop a client information handout on return to private driving after onset of a cardiac condition.

The outcomes of the project are that eligible clients now receive medical clearance to return to commercial driving in a timely manner after a cardiac event and that staff and clients are confident of the process for obtaining commercial driving clearance.

Rural Cardiac Rehab

Madonna Prenzler[1]

1. Ipswich Cardiac Rehab Service, QLD, Australia

Ipswich cardiac rehab service is a hub and spoke model of care that services 4 rural locations in QLD in the WMHHS. There was an identified lack of consistency in the way that cardiac rehab was being delivered across these locations.

Through targeted meetings conducted in the rural locations, a comprehensive document was produced outlining what each rural site had access to help conduct cardiac rehab, as well as what Ipswich had. This document helped the rural sites to streamline their care for their patients and provide a consistent cardiac rehab across the rural sites. Workshops were also conducted by Ipswich to help onboard the rural sites to the purpose of cardiac rehab.

This allowed data to be drawn back from the rural sites allowing Ipswich to complete patients on the QCOR data base. This project also helped both Ipswich and the rural sites to meet strategic plan for the WMHHS in terms of providing care closer to home. Rural cardiac rehab nurses reported feeling better supported and connected to the main hub of Ipswich than ever before.

Telehealth interventions for the secondary prevention of coronary heart disease: A systematic review and meta-analysis

Lis Neubeck[1], Kai Jin, Sahar Khonsari, Robyn Gallagher, Patrick Gallagher, Alexander M Clark, Ben Freedman, Tom Briffa, Adrian Bauman, Julie Redfern

1. Edinburgh Napier University, Edinburgh, United Kingdom

Background: Coronary heart disease (CHD) is a major cause of death worldwide. Cardiac rehabilitation, an evidence-based CHD secondary prevention programme, remains underutilized. Telehealth may offer an innovative solution to overcome barriers to cardiac rehabilitation attendance. We aimed to determine whether contemporary telehealth interventions can provide effective secondary prevention as an alternative or adjunct care compared with cardiac rehabilitation and/or usual care for patients with CHD.

Methods: Relevant randomized controlled trials evaluating telehealth interventions in CHD patients with at least three months' follow-up compared with cardiac rehabilitation and/or usual care were identified by searching electronic databases. We checked reference lists, relevant conference lists, grey literature and keyword searching of the Internet. Main outcomes included all-cause mortality, rehospitalization/cardiac events and modifiable risk factors.

Results: In total, 32 papers reporting 30 unique trials were identified. Telehealth was not significant associated with a lower all-cause mortality than cardiac rehabilitation and/or usual care (risk ratio (RR)=0.60, 95% confidence interval (CI)=0.86 to 1.24, p=0.42). Telehealth was significantly associated with lower rehospitalization or cardiac events (RR=0.56, 95% CI=0.39 to 0.81, p<0.0001) compared with non-intervention groups. There was a significantly lower weighted mean difference (WMD) at medium to long-term follow-up than comparison groups for total cholesterol (WMD= -0.26 mmol/l, 95% CI= -0.4 to -0.11, p <0.001), low-density lipoprotein (WMD= -0.28, 95% CI = -0.50 to-0.05, p=0.02) and smoking status (RR=0.77, 95% CI =0.59 to 0.99, p=0.04].

Conclusions: Telehealth interventions with a range of delivery modes could be offered to patients who cannot attend cardiac rehabilitation, or as an adjunct to cardiac rehabilitation for effective secondary prevention.

The effects of different intensity exercise training in patients with left ventricular assist devices: A randomised controlled trial

Nacho Suarez[1], Anna Scheer, Louise Naylor, Daniel Green, Kaitlyn Lam, Andrew Maiorana

1. Curtin University / Fiona Stanley Hospital, WA, Australia

Background: Left ventricular assist devices (LVADs) are an established treatment for patients with advanced heart failure. To date, studies evaluating the impact of aerobic training in patients with LVADs have focused on moderate intensity exercise.

Methods: This was a randomised controlled trial comparing the effects of high-intensity interval training (HIIT) versus moderate-intensity continuous training (MICT) in patients with LVADs. Peak oxygen consumption (VO2peak), 6-minute walk distance (6MWD) and endothelial function (flow-mediated dilation; FMD) were assessed at baseline and after 12 weeks of supervised training performed 3x weekly. Participants were randomised to either HIIT (4x4-min 80-90% VO2 reserve, interspersed with 4x3-min at 50-60% VO2 reserve) or MICT (28-min continuously at 50-60% VO2 reserve). Between-group differences were analysed using general linear models adjusting for baseline values and age (STATA). $P<0.05$ was considered statistically significant. Data are expressed as mean±SD.

Results: Fourteen participants (HIIT: 57.8±13.9 years, n=7) and (MICT: 58.9±13.7 years) undertook the study. No major adverse events occurred in response to training. HIIT significantly improved VO2peak (from 16.8±4.2 to 19.8±6.1 mL.kg-1.min-1) compared with MICT (16.7±3.2 to 17.6±4.5mL.kg-1.min-1) ($p<0.05$). No significant differences were detected in 6MWD (HIIT: 462 v113 to 556±56m) vs (MICT: 467v55 to 534±41m) or FMD (HIIT: 6.98±3.3 to 8.02±3.9%) vs (MICT: 7.09±2.4 to 8.54±3.8%).

Conclusion/Implications: HIIT appears to be well tolerated and may provide greater aerobic capacity gains than MICT in patients with LVADs. Further studies are required to evaluate the effect of HIIT on a broader range of physiological and clinical outcomes in this clinical cohort.

The safety and feasibility of early resistance training following median sternotomy (The SAFE-ARMS Study): An interim analysis.

Jacqueline Pengelly[1], Doa El-Ansary, Colin Royse, Alistair Royse, Gavin Williams, Adam Bryant

1. Swinburne University of Technology, VIC, Australia

Background: Routine worldwide sternal precautions restrict use of the upper limbs and trunk for 6 to 12 weeks post-operatively, yet sternal micromotion has not been measured during upper limb resistance exercises.

Methods: Interim analysis from the resistance arm of a pilot randomised controlled trial included eight males following cardiac surgery via median sternotomy at age 72.9± 6.9 years. Six upper limb exercises (seated row, shoulder pulldown, shoulder press, bicep curl, triceps extension and lateral raise) were assessed at 2, 8 and 12 weeks postoperatively. Motion at the sternal edges in the lateral (coronal plane) and anterior-posterior (sagittal plane) directions was measured with ultrasound at the mid and lower sternum, at 6 and 10 cm from the sternal notch. Pain was recorded during exercise, using a Numeric Rating Scale (0-10) ranging from no pain (0) to maximal pain (10).

Results: Maximum sternal micromotion was 0.06±0.07cm (-0.03-0.16) for triceps extension, 0.04±0.09cm (-0.11-0.15cm) for seated row, 0.04± 0.08cm (-0.07-0.15) for shoulder press, 0.08±0.04cm (-0.01-0.12) for biceps curl, 0.03± 0.05cm (-0.02-0.10) for lateral raise and 0.02±0.08cm (-0.09-0.11) for shoulder pulldown. Pain at rest was 0/10 at 2 weeks, 0/10 at 8 weeks and 0/10 at 3 months. There was no increased sternal pain reported for the upper limb movements at any time period.

Conclusions/Implications: This study demonstrates that the commencement of early upper limb resistance training is feasible and safe.

The strength of story

Kathryn Tonini[1]

1. Healthy Living, NT, Australia

While there continues to be a large gap between the cardiovascular health outcomes of non-Indigenous Australians and Indigenous Australians, it is vital that clinicians continue reflecting on practice and developing services in order to improve cardiac outcomes. Cardiac rehabilitation is vital in improving the health outcomes of people with cardiac conditions, however there are a number of challenges and barriers that must be navigated when supporting heart health in remote communities of the Northern Territory.

Story telling plays a significant role in sharing knowledge and understanding in Indigenous Australian communities. By sharing stories, clinicians can learn more about client decision-making and priorities, facilitating a more individualised approach to cardiac rehabilitation and education.

Through the use of anecdotal story telling, this presentation will attempt to challenge clinicians' attitudes related to providing cardiac rehabilitation services to remote communities. This presentation will identify a number of challenges and barriers that can effect the provision and adoption of cardiac rehabilitation and education services in remote communities of the Northern Territory and attempt to encourage clinicians to look at behaviours and actions from a different perspective.

Understanding patient and family experiences during care process of same day discharge after percutaneous coronary intervention

Yingyan Chen[1], Prof Andrea Marshall, Frances Lin

1. Griffith University & Gold Coast University Hospital, QLD, Australia

Background: Although same day discharge (SDD) following percutaneous coronary intervention (PCI) is a safe option and accepted by patients and families, their experiences have not been well examined. This study aimed to explore patient and family experiences during SDD process.

Methods: This interpretative study was undertaken in the cardiac service of an Australian tertiary hospital. Semi-structured phone interviews with 31 patients who were initially eligible for SDD before PCI and 23 families were conducted. Binary responses were coded and quantified in numbers (percentages). Content analysis was used to analyse the qualitative data.

Results: Of 31 patients, 17 went home the same day and 14 stayed overnight due to post-procedure complications. Approximately 50% patients and families were informed of the possibility of SDD. Two-thirds of patients received discharge instructions while most families did not. Most SDD patients and families regarded SDD as a preferred option because of comfort and convenience. Several SDD patients and families expressed uncertainty towards SDD as feeling nervous and apprehensive. Three SDD patients felt overwhelmed by information given after PCI and one stated attending cardiac rehabilitation was unnecessary. All SDD patients and families were satisfied with SDD experiences. Only those patients who stayed overnight and their families related negative experiences of SDD due to the fear of complications.

Conclusion and implications: Experiences of SDD varied among patients and families. Offering information and support from the beginning of the care trajectory to discharge using a proactive approach may promote patient and family positive experiences during SDD care process.

Uptake of a primary care atrial fibrillation screening program (AF-SMART): a realist evaluation of implementation in metropolitan and rural general practice

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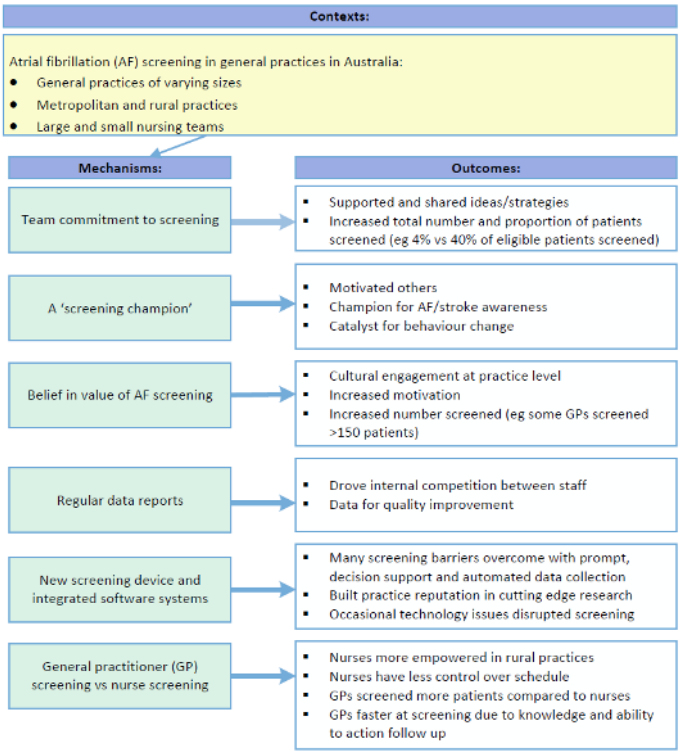
BACKGROUND: Atrial fibrillation (AF) screening in people =65 years is recommended by international guidelines. The AF Screening, Management, and guideline-Recommended Therapy (AF-SMART) implementation studies in general practice include custom-designed eHealth implementation tools.

METHODS: Realist evaluation of the AF-SMART studies to explain the circumstances in which AF screening worked. To develop preliminary theories, we conducted 35 semi-structured interviews with 17 general practitioners (GPs), 9 nurses, 9 practice managers in 13 practices (8 metropolitan, 5 rural). Interview and quantitative screening data were analysed, and contributed to refinement of the program theory.

RESULTS: Mechanisms through which implementation was most effective related to local practice dynamics, trust, belief in the value of screening, ease of use of the technology and a local champion. Staff/setting characteristics affected development of mechanisms and outcomes e.g. nurses tailored screening approaches according to practice culture/structure. All practices faced similar issues: time pressure, competing priorities, and occasional technology problems, but these were overcome in certain practices. Where senior GPs felt eHealth tools reflected well on the practice, a greater proportion of patients were screened. In contexts with well-organised workflow and good computer systems, screening was most successful. Regular feedback of data was beneficial for quality improvement and motivation.

CONCLUSIONS: an AF screening program is more successful when these contextual features are found: team commitment, a screening champion, well-organised workflow and computer systems; and a belief that AF screening is worthwhile.



Utility and acceptability of empowerment-based eHealth cardiac rehabilitation of coronary heart disease patients

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Background: Cardiac rehabilitation (CR) uptake and adherence remain sub-optimal despite apparent health benefits. This study aims to evaluate the feasibility and acceptability of a hybrid approach web- and tele-platform based eHealth CR program.

Methods: Patients (n=11, 82% men) hospitalized with index diagnosis of coronary heart disease (CHD) at Wuhan, China, participated in the face-to-face individual assessment and engagement session, the teaching of web- and tele-platform, and 2-week remote e-platform utilization provided feedback on the usability, feasibility, and satisfaction of the intervention. A mixed-methods approach was used to collect perceptions of the patients.

Results: All participants were highly satisfied with the quality of health information, ease of learning and use of the platform, ease of watching videos, ease of uploading self-monitoring data, and comprehensibility of health information. Perceived usefulness was highly rated by all participants in terms of understanding cardiac related health problems, gaining health information, receiving support from health professional. Post-intervention interview responses coalesced into several themes regarding their intervention experiences including: (1) addressing the gap between previous and recommended health behaviour; (2) recognizing eHealth cardiac rehabilitation support; (3) self-monitoring as motivation; (4) seeking real-time professional advice; (5) learning shared concerns and progress from peers; and (6) reinforcing behaviour change from family support.

Conclusions: Our study indicated the feasibility and acceptability of a web- and tele-platform based hybrid approach eHealth CR program integrating the empowerment strategies. This CR modality has the potential to facilitate positive healthy lifestyle change and to modify the risk factors to improve CHD patient health outcomes.

Validity of the Past-day Adults' Sedentary Time questionnaire in a Cardiac Rehabilitation population.

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Background: Self-report measures of sedentary behaviour are easier to use in a clinical setting, yet no self-report measures of sedentary behaviour appear to be validated in cardiac rehabilitation over time. The aim of this study was to assess the validity of the Past-day Adults' Sedentary Time (PAST) questionnaire in a cardiac rehabilitation population over 12-months.

Methods: Seventy-two cardiac rehabilitation participants were recruited to a prospective cohort study. Participants wore an ActiGraph ActiSleep accelerometer (sedentary time < 100 counts/minute) for 7-consecutive days and completed the self-administered PAST questionnaire at baseline, 6-weeks, 6 and 12-months. Total daily sedentary time from both methods were compared using Bland-Altman plots and Spearman rank-order correlations.

Results: Agreement between the two measures of sedentary time improved over 12-months. At 6 and 12-months there was a good level of agreement between measures (mean difference between accelerometer and PAST 57 and -0.7 minutes, respectively), although the dispersion of the differences were wide (95% limits of agreement -428 to 541 and -500 to 498 minutes, respectively). There were weak correlations between the PAST questionnaire and average accelerometer measured sedentary time at all time points (Spearman's rho = -0.249 to 0.188)

Conclusions: Following repeated assessments, the PAST questionnaire may be useful to determine sedentary time in cardiac rehabilitation participants at a group level, with participants appearing to more accurately recall their time spent in sedentary behaviour. Further research is indicated to assess the validity of sedentary behaviour questionnaires in cardiac rehabilitation, with a combination of objective and self-reported measures currently recommended.

Warfarin education strategies and their effect on patient outcomes: a literature review

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Background: The Australian National Heart Foundation clinical guidelines recommend an effective Integrated Care Management approach should include patient-centred education, decision-support, eHealth technology and, involve evidence-based interventions for monitoring patient outcomes and adherence.

Methods: A critical literature review was undertaken to describe the content, mode of delivery, theoretical basis and effectiveness of educational interventions for patients with atrial fibrillation taking warfarin.

Results: Scopus, Pubmed and Cinahl databases were searched 2009-2019 using the terms [Education] AND [Atrial Fibrillation] AND [Warfarin]. Of 584 papers, 13 studies were identified, 10 randomised clinical trials, one cohort study and two before and after intervention studies.

There is significant heterogeneity in the educational intervention strategies regarding outcome measures, mode of delivery and evaluation. Outcome measures included INR control, complications, knowledge, quality of life, adherence-related data, depression scales and anticoagulation satisfaction.

Education sessions were face-to-face, lasted 15-60 minutes using powerpoints, videos, DVDs, worksheets, brochures, questionnaires and diaries. Only one study reported on a smart-phone application focusing on patient self-management, and two studies had a theoretical basis. However, educational content covered similar topics.

Implications for practice: Statistically significant improvements in knowledge, INR control and complications occur in studies where there is increased accessibility or periodic repetition of educational content via a mobile application, Internet, telephone or health care provider.

Conclusions: In order to address Heart Foundation recommendations, novel research studies are required to determine the relationship between 'on demand' eHealth education and patient engagement, decision-making and adherence. Clinical outcome measures should include INR control as a proxy for prevention of stroke and/or bleeding

What content is essential to deliver within a cardiac rehabilitation program? Results of a modified-Delphi approach

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Background: Currently in Australia, cardiac rehabilitation (CR) programs are not standardised, which has resulted in considerable variation in the delivery of content. This project aimed to develop a core standardised program outline for Phase II CR programs in Victoria.

Methods: Using the RAND/UCLA Appropriateness Method, a two-phase process was undertaken to develop and validate core content of a standardised CR program. Phase 1 consisted of a literature review of national and international CR guidelines/core components to determine core features and content recommended internationally to be delivered in CR programs. The level of evidence underpinning each recommendation was then assessed. Phase 2 involved an invited national multidisciplinary expert advisory group (EAG) who rated the 'necessity' of the identified core content (scale 1 - 9) via a modified-Delphi process.

Results: The literature review identified ten content areas within four categories of education; CR foundations, developing heart health knowledge, psychosocial health and life beyond CR. From here, 45 best practice statements were identified. At the conclusion of the modified-Delphi process with the EAG (n=12), 24 statements were rated as essential (median score = 8 or higher), 23 as desirable (median score = 6 - 7) and 1 statement was omitted (median score 5.5).

Conclusions/Implications: We have developed a well-defined, evidence-based, expert consensus driven, standardised program outline for Australian CR which highlights the essential areas all programs need to provide at a minimum. This program outline will provide an essential resource for Australian CR program coordinators and staff, irrespective of the mode of program delivery.

Will patients who are returning to work after a myocardial infarction benefit from access to a nurse led clinic within two weeks of discharge

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Background/Rationale: Patients discharged from Sir Charles Gairdner Hospital receive this education over 8-10 weeks. However, patients who work are only able to take two weeks of sick leave, leaving them unable to access all available services.

Methods: All eReferrals admitted to the Coronary Care Unit with MI were screened. Those meeting the inclusion criteria were approached during the admission, informed of the study and invited to receive cardiac rehabilitation education via the post-discharge, nurse-led clinic within the two weeks they were off sick. Inclusion criterial were patients under 65 years, diagnosed with MI, living in metropolitan Perth, and returning to work. Patients completed a pre-post questionnaire to assess the perceived benefit of attending the clinic. Data were collected upon arrival at the clinic (pre) and two weeks later (post).

Outcomes: During the 10 weeks of data collection 14 patients were seen in clinic and 12 undertook the second questionnaire. The results showed that the patients were more aware of their risk factors and managing their heart disease after attending clinic. They had increased their exercise significantly with over 50% doing 30 minutes four times or more a week.

Conclusions / Key messages: This younger working patients cohort indicated a clear preference to receive education in a face to face clinic format within two weeks. Responses to the clinic were positive and suggested that patients felt more informed and motivated to make behavioural changes in the short term. Recommendations are to continue the clinic and undertake further evaluation with a larger sample and longer follow-up.