Supplementary table 1 Summary of database searches

Number of studies identified by search† keywords (limits are English language, human studies and years 2007–2016)				
Database	**Search 1** cardiac rehabilitation OR secondary prevention	**Search 2** (AND) rural OR remote or Aborigin* OR Torres Strait Islanders Or Indigenous OR Oceanic ancestry groups (Medline MeSH term)	**Search 3** (AND) barriers OR enablers (Scopus, PsychInfo, Medline)	**Combined result**
CINAHL	3845	47 661	_	12
SCOPUS	11 152	12 019	254 905	36
Informit	45	21 806	_	7
PsychINFO	16 104	40 127	50 656	18
Medline (OVID)	16 776	63 492	83 216	24

† Each search was done separately and combined with AND for final result. CINAHL and Informit showed no results when barriers and enablers were added, so in these databases only searches 1 and 2 were included.

Codes

1. pathways/transition of care/referral/eligibility	9. non completion of programs	17. abandoning medical advice & using alternate therapies	25. GPs one stop shop and/or not supportive of CR
2. health prof as liaison and facilitators	10. alternate programs (include Heart Health Manual; telephone support and telemedicine); structured support - flexible format.	18. difficulties in changing risky behaviour e.g. families continuing to smoke	26. funding
3. support groups	11. program specific for Aboriginal people	19. community activities e.g. walking groups, healthy cooking classes; using media to promote healthy behaviour; involve local gyms,	27. staff judgemental
4. framework or plan of care	12. Aboriginal people involved	20. opportunistic casual minimal interventions in any environment e.g. supermarket; home visits;	28. psycho-social - depression, anxiety, denial, sadness guilt, grief, motivation
5. geographic distance	13. Aboriginal cultural awareness	21. involving ambulance officers in CR programs	29. non conventional CR and cost effectiveness
6. poor IT access or skills	14. yarning and flexibility	22. lobbying restaurants to provide healthy food choices;	30. CR unnecessary
7. decline CR, unecessary	15. work preventing attendance	23. develop automatic referral/information /education system	31. co-morbidities: barrier to attendance
8. women under represented	16. costs e.g. travel, medications, consultations with health professionals	24. communication with other services and health professionals	32. educations levels and social vulnerability
Themes: i) referral, health service pathways and planning; ii) Alternate & flexible prorams including cultural iii) Professional roles and influence			33. Poor health services standards
iv) Knowing, valuing, psycho-social factors	v) Financial costs – personal and health services		

Author	Title	Year	Study Design	Focus populations & environment	Findings including CR enablers, barriers and pathways	Excluded/Limitations	Codes
Beasley, C. Dixon, R.	Phase II Cardiac Rehabilitation in Rural Northland	2013	**Qualitative descriptive, exploratory study,** Using convenience sampling, focus-groups and semi structured interviews to focused on the perceptions and experiences of nurses involved with the delivery of cardiac rehabilitation in a rural health care setting in a Northland Region of New Zealand	N: 12 nurses from N. NZ rural areas. Consultation with "Taumata" a group of senior Maori staff - only one meeting	Focus on rural-based nurses' role as liaison and facilitators rather than of their responsibilities in the direct delivery of CR. **Enablers:** Support groups; local knowledge: rapport with clients; need for a clear transition of care, referral and framework or plan of care to support an effective home based alternative		1,2,3,4,
Bhagwat, M. M. Woods, J. A. Dronavalli, M. Hamilton, S. J. Thompson, S. C.	Evidence-based interventions in primary care following acute coronary syndrome in Australia and New Zealand: A systematic scoping review	2016	**Systematic review:** summarises published evidence from Australia and New Zealand regarding management in primary care after discharge following ACS.		References reviewed. No articles found that were consistent with the inclusion/exclusion criteria	**Excluded:** not specific to CR. Focuses in treatment rather than rehabilitation..	
Blair J, Corrigan H et al	Home versus hospital-based cardiac rehabilitation: a systematic review	2011	**Systematic review:** examines the current evidence for home- versus hospital-based cardiac rehabilitation. Home-based cardiac rehabilitation offers greater accessibility to cardiac rehabilitation and has the potential to increase uptake		References reviewed. No articles found that were consistent with the inclusion/exclusion criteria	**Excluded:** Does not meet inclusion criteria. Focus is on home based CR is as effective as hospital based	
Brual J, Gravely S, Suskin N, Stewart D, Grace S	The role of clinical and geographic factors in the use of hospital versus home-based cardiac rehabilitation. Ontario, Canada	2012	**A Quantitative** descriptive secondary analysis of clinical data extracted through a patient questionnaire including the Duke Activity Status Index followed by a further questionnaire 9 months later. Drive times to the CR site from patients' homes were also included. To assess whether clinical and geographic factors were related to use of either a hospital- or home-based program.	Initially N 2486 cardiac outpatients from 97 cardiology practices (33%) across a range of urban and rural areas were contacted. Of the total cohort 330, (13.3%) attended outpatient CR, and 43 (1.7%) home based (HB) programs.	**Barriers:** geographic distance, lack of referral to HB programs and decision re eligibility **Enablers:** High functioning clients more likely to complete the program. Home based CR equal in results to centre based.	**Limitations:** A relatively small number participated, raising questions about referral practices, decisions on eligibility and offering programs that are suited to a persons' particular circumstances.	1, 5, 10
Meshgin N, Canyon S,	Cardiac rehabilitation: Reducing hospital readmissions through community based programs	2008	**Observational study**			**Excluded:** need and benefit of standard CR only. Data collection outside date limitation.	

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Clark, R. A. Conway, A. Poulsen, V. et al	Alternative models of cardiac rehabilitation: a systematic review	2015	**Systematic review of quantitative** research. 22 databases were searched to identify quantitative studies or systematic reviews of quantitative studies regarding the effectiveness of alternative models of cardiac rehabilitation. Included studies were appraised using a Critical Appraisal Skills Programme tool and the National Health and Medical Research Council's designations for Level of Evidence		**Findings:** a paucity of data on effectiveness of alternative models of CR in rural, remote, and culturally and linguistically diverse populations. No need to rely on hospital-based strategies alone to deliver effective CR. Community better served by increasing alternative models i.e. Brief telehealth interventions tailored to individual's risk factor profiles as well as community- or home-based programmes; choices available for patients that best fit their needs, risk factor profile & preferences Insufficient evidence to support the effectiveness of internet-based delivery of CR compared with the high-quality evidence demonstrating the effectiveness of personal contact via telephone through 'coaching' or a written action plan	**Excluded:** background information .Reference list reviewed 9 potential articles identified. 3 selected. The remaining articles excluded on the basis of the inclusion/ exclusion criteria	
Clark R, Tideman P, Tirimacco R.	A Pilot Study of the Feasibility of an Internet-based Electronic Outpatient Cardiac Rehabilitation (eOCR) Program in Rural Primary Care	2013	**Mixed methods**, combining descriptive and summary statistics for demographics and website-hit-counts with qualitative analysis of participant interviews and feedback surveys.		Barriers poor referral, lack of IT facilities and skill. Levels of completion 46% greater than traditional CR (TCR) but only 50% of those eligible participated so overall access and completion of CR remains low. No data on comparison between TCR and eOCR. however risk factor improvement was described in eOCR	**Excluded:** background information. Pilot study only	1,6
Collins, L Scuffham, P Gargett,	Cost analysis of gym-based versus home-based cardiac rehabilitation	2001				Excluded: article 2001 - date limitation Jan 2007 - Dec 2017	
Courtney-Pratt H. Johnson C. Cameron-Tucker H. Sanderson S.	Investigating the feasibility of promoting and sustaining delivery of cardiac rehabilitation in a rural community	2011	pilot study but no research methodology described. Small sample of 8 people			not valid research	
Dalleck L. Schmidt L. Lueker R.	Cardiac rehabilitation outcomes in a conventional versus telemedicine-based program. Geographic local not identified.	2011	**Quantitative** study, using convenience sampling based on geographic location. i.e. patients from rural areas were supported through a telemedicine program and urban based were referred to conventional CR. No information was provided about attendance or completion rates. The comparisons were based on modification of risk factors. demonstrating no significant difference.		Telemedicine enables people to stay in their local community where they have support systems, removes the travel barrier. For people in rural areas provides improved educational services and medical specialist contact.	**Excluded:** Not well constructed research. Percentage of eligible people attending and completing the program is essential information when considering the success or otherwise of a program	
Davey M. Moore W. Walters J.	Tasmanian Aborigines step up to health: Evaluation of a cardiopulmonary rehabilitation and secondary prevention program	2014	**Mixed method:** quantitative attendance, risk factor modification. Qualitative: interviews with participants and thematic analysis	13 programs involving 92 Tasmanian Aboriginal participants. 61% women. Cohort included people with COPD as well as cardiac disease.	A program specifically designed for Aboriginal people, and involving Aboriginal Health Workers (AHWs) in Tasmania demonstrated the benefits of exercise; shopping, cooking and eating healthy food; medication usage; stress and psychological well-being; and smoking cessation		8,11, 12
Daws K. Punch A. Winters M. et al.	Implementing a working together model for Aboriginal patients with acute coronary syndrome: An Aboriginal Hospital Liaison Officer and a specialist cardiac nurse working together to improve hospital care	2014	**Quantitative** case study report that comprised a retrospective audit of medical records of Aboriginal people admitted to hospital with cardiac disease, intervention with Clinical Nurse and Aboriginal Health Liaison Officer providing information on CR to in-patients and ensuring and following up on referral to CR demonstrating a significant improvement in attendance to post discharge rehabilitation programs	Setting Melbourne hospital, Aboriginal patients admitted with cardiac disease. Baseline 2011 - 2013: 68 case notes audited. 42 people referred to CR. None attended.	Findings: 42% noted for referral to CR. 10 patients (15%) referred, none attended. Intervention group: July 2008 - June 2011 - 15 Aboriginal patients Thirteen (86%) patients were referred to CR and eight of these (62%) attended. Two other patients were referred to heart failure programs and one completed. Barriers to attendance: distance to travel, access to transport and petrol costs. Enablers: Referrals and all health professionals providing the same information about the importance of CR. Collaborative working relationships between cardiac nurses and Aboriginal liaison officers has a positive effect in referrals and attendance to CR. Improved communication and working closely with Aboriginal people is an enabler for CR attendance	**Excluded:** Background information. Did not meet the inclusion/exclusion criteria.	1, 2, 11

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De Angelis C. Bunker S. Schoo A.	Exploring the barriers and enablers to attendance at rural cardiac rehabilitation programs	2008	**Mixed method**: Quantitative -questionnaire included all people eligible for CR in the "Greater Green Triangle" of Victoria. collect demographic data as well as information on barriers and enablers to program attendance, and patient receptiveness to and preference for accessing alternative modes of CR program delivery. Qualitative: Focus groups - comprised CR participants or those eligible, their carers and the CR health professionals at two of the six sites	97 patients from the six sites participated in the study, 27 (28%) female and 70 (72%) men. Eighty-one (84%) of patients attended in their respective CR programs with 16 (16%) declining to attend.	Distance to travel has been identified as a barrier to attendance, alternative modes of delivery need to be trialled to increase participation rates and provide attractive workable options for patients and health professionals. In order to encourage initial CR attendance, early referral to, and contact from, the local CR coordinator is essential. In particular doctors, both GPs and specialists are vital in reinforcing the benefits of participation in CR. All health professional involved in direct patient contact (i.e. doctors, nurses, allied health professionals) should promote the need to attend CR as 'All staff singing the same song' was seen as powerful reinforcement to participate		1, 2, 3, 5, 18,28,30.
Digiacomo M. Davidson P. Taylor P. et al.	Health information system linkage and coordination are critical for increasing access to secondary prevention in Aboriginal health: A qualitative study	2010	Full article not available:			**Excluded:** full article no longer available. article	
DiGiacomo L. Thompson C. Smith S. et.al.	I don't know why they don't come': Barriers to participation in cardiac rehabilitation	2010	**Qualitative study:** Semi structured interviews and thematic analysis of staff from health services as identified through Directory of Western Australian Secondary Prevention Services12 and Aboriginal Medical Services in WA.	Semi structured interviews were undertaken with 28 health professionals at public CR services and 10 health professionals from Aboriginal Medical Services in WA. The participants represented 17 services (10 rural, 7 metropolitan) listed in the WA Directory of CR services.	**Emergent themes** included a lack of awareness of Aboriginal CR patients' needs, low level of cultural awareness training for health professionals, and the need for Aboriginal health staff to facilitate access for Aboriginal patient		11, 12, 13
Dimer L. Dowling T. Jones J.	Build it and they will come: Outcomes from a successful cardiac rehabilitation program at an Aboriginal Medical Service	2013	**Mixed method**s were employed to evaluate the outcomes of the program. These included interviews, questionnaires and yarning sessions as well as objective assessment of cardiovascular risk factors. Changes in risk factors were evaluated pre- and post-program.	Aboriginal Medical Service, Perth WA.28 participants (20 females) who completed 8 weeks of CR	**Enablers:** engaging the family and broader community to address the burden of chronic disease in Aboriginal populations; accepting self referrals; programs run by the Aboriginal Medical Services (AMS). High degree of flexibility re attendance; using informal discussion described as "yarning"		11, 12, 13, 1
Echeverri R. Winters C.	Barriers to participation in cardiac rehabilitation: a rural perspective...2007 NACNS National Conference abstracts: February 28-March 3, 2007, Phoenix, Arizona	2007	**Quantitative,** convenience sample questionaries to investigate barrier to CR in Rural Areas of Arizona, USA			**Excluded:** Abstract only - results not published	
Einarsdóttir K, Preen B, Emery D. et al	Regular primary care plays a significant role in secondary prevention of ischemic heart disease in a Western Australian cohort	2011	**A retrospective cohort design**		Focusses on regular visits by GP's. Indicates the importance of scheduled, regular GP visits for the secondary prevention of Ischaemic Heart Disease	**Excluded:** Not CR however important findings	
* Fernandez R, Davidson P, Griffiths R. (*The 3 Fernandez el at articles use the one study and report from different perspectives)	Cardiac rehabilitation coordinators' perceptions of patient-related barriers to implementing cardiac evidence-based guidelines	2008	**Qualitative** study: A semi structured interview and thematic analysis focussed on CR coordinator's perspectives of the ***patient-related barriers*** to guideline implementation.	20 randomly selected CR coordinators (25% of all co-ordinators) from 4 geographic regions of NSW classified as highly accessible, accessible, moderately accessible, remote, and very remote according to the Accessibility Remoteness Index of Australia (ARIA).	**Barriers** - include coming to terms with a diagnosis of heart disease, not considering it to be serious; using alternate therapies and not adhering to prescribed treatment; challenges to changing risky behaviour e.g. families continuing to smoke; cost, including medications, travel and visiting health professionals, time off work.		3, 5, 15, 16, 17, 18

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* Fernandez S. Davidson P. Griffiths R.	Overcoming barriers to guideline implementation: The case of cardiac rehabilitation	2010	**Qualitative** study: A semi structured interview, thematic analysis on CR co-ordinators.	20 randomly selected CR coordinators (25% of all co-ordinators) from 4 geographic regions of NSW classified as highly accessible, accessible, moderately accessible, remote, and very remote according to the Accessibility Remoteness Index of Australia (ARIA).	**Enablers** -Strategies used by CR co-ord.in order to improve access to CR: Use of media; opportunistic casual minimal interventions in any environment e.g. supermarket; home visits; ; community activities e.g. walking groups, healthy cooking classes, lobbying restaurants to provide healthy food choices; involving ambulance officers in CR programs (CPR); develop automatic referral/information/education system. using media to promote healthy behaviour; involve local gyms, communication with GPs. **Barriers-** health care has a greater focus on acute care rather than health promotion, geographic location; low level referrals		2, 3, 5, 10, 19, 20, 21, 22, 23, 24
*Fernandez S, Davidson P, Griffiths R.	Improving cardiac rehabilitation services - Challenges for cardiac rehabilitation coordinators	2011	**Qualitative** semi-structured interview approach was used to explore and develop an understanding of the ***co-ordinator related challenges*** to implementing CR services	20 randomly selected CR coordinators (25% of all co-ordinators) from 4 geographic regions of NSW classified as highly accessible, accessible, moderately accessible, remote, and very remote according to the Accessibility Remoteness Index of Australia (ARIA)	**Barriers:** Funding, difficulty in accessing health professionals, distance, lack on knowledge of prioritisation of CR by health professionals, poor communication within health services/ health professionals, slow and/or low rate of referrals. GPs consider themselves as a "one stop shop" Lack of planning No enablers presented		4, 5, 24, 25, 26
Fletcher M, Burley B, Thomas E. et al	Feeling supported and abandoned: Mixed messages from attendance at a rural community cardiac rehabilitation program in Australia	2014	**Qualitative** - semi-structured interviews, focus group. Only one program reviewed	8 (7 men and 1woman) of 18 patients who completed the CR program , volunteered for focus group discussion. Latrobe community Health in Rural Victoria	Positive response to CR from participants, however feeling "abandoned" after the program ended. Recommendation -post CR follow up phone calls. A mentorship system developed using people who have completed the CR program and volunteer to be mentors	**Excluded:** Useful comments but not a comprehensive study and contributed little new information.	
Fletcher, S. M. Burley B.	Strategic moments: Identifying opportunities to engage clients in attending cardiac rehabilitation and maintaining lifestyle changes	2016	**Qualitative** study: Semi structured interviews and focus groups. Participants were interviewed before, after, and at 6 months post-CR	84 from the total population of 114 post discharge cardiac patients referred to CR in a 6 month period.	**Barriers:** Three themes were identified that reflected the participant decision-making experience: (1) invitation and information about participation in CR; (2) person-centred approach to CR provision; and (3) ongoing support needs. Significant decision-making points identified were after the cardiac event; before and after hospital-based CR; before and after community-based CR; and at 6 months after the cardiac event. At any time there is a risk that the client can become lost or disengaged in the service system, but providing contact at these points can allow them to reengage	**Excluded:** Insufficient information provided on qualitative methodology. i.e. how the information was gathered. E.g. focus groups, individual interviews, semi-structured interview etc.	
Flodgren G. Rachas A. Farmer J. et al	Interactive telemedicine: effects on professional practice and health care outcomes	2015	**Meta-analysis** of telemedicine and chronic disease treatment.		For program based on tele-medicine, centre based or telephone support programs, not specifically CR, no difference in outcomes or slight improvement in blood sugar control in diabetic patient reported	**Excluded:** Not specifically CR but useful findings about the potential use of tele-medicine	

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Govil D, Lin I, Dodd T. et al	Identifying culturally appropriate strategies for coronary heart disease secondary prevention in a regional Aboriginal Medical Service	2014	**Mixed method research**: Quantitative: medical record audit of patients with coronary health disease and treated by a regional Aboriginal Health Service (AHS) in Western Australia. The findings of the audits were used to guide the questions of the qualitative component for the focus groups undertaken with patients with CHD from the AMS. It is assumed that the focus groups were only undertaken with staff and patients of the AHS.	The results were compared with national data by review of 30 records, stratified by age and gender, from 11 centres who had conducted CHD audits in the past 6 months. It is not stated if the national group was comprised of only Aboriginal people or a cross section of the population.	**Enablers**: .Brief interventions and discussions about lifestyle to address CHD risk factors occurred in both AHS and non-Aboriginal services. However, formal chronic disease management plans and client referral to support services for targeted management of risk factors occurred less often in AHS. The proportion of patients prescribed aspirin, long-acting nitrates and lipid-lowering drugs was lower in the AHS group**.** Care plans were not routinely used by either group**.** **Barriers**: some AMS participants did not have a good understanding of the disease and its consequences, so were not proactive in managing their conditions. Without patients developing an understanding of CHD and its implications for their health, it may be difficult to improve adherence to evidence-based management. Family responsibilities are often a priority. **Enablers -** Alternate approaches to CR need to be tried and evaluated. AHSs need to be utilised for CR and chronic disease secondary prevention	**Excluded:** small numbers given the N30 drawn from 11 centres nationally. Some useful descriptive insights provided	
Greenhill, J Kucia, A Wachtel, T	Unstructured cardiac rehabilitation and secondary prevention in rural South Australia: does it meet best practice guidelines?	2008	**Quantitative** retrospective descriptive analysis of medical records analysis was used to review CR and secondary prevention interventions within a 12 month time period in South Australia. Demographic and ARIA Index was used to differentiate between various population groups in terms of rural and remoteness. 42 records were included. One person identified as an Aboriginal and Torres Strait Islander.	77 eligible participants, permission to access the medical records of 55 hospitalised patients, and 34 of these 55 patients in GP clinic follow up.	**Enablers:** The review of medical records demonstrated that when a structured CR was not available, people were unlikely to receive CR or secondary preventions as per the Heart Foundation best practice guidelines. It is recognised that the review did not provide accurate information on risk factors, because identification of such relied on medical record documentation. It is noted that there is a lower perceived importance of lifestyle factors versus medical and pharmaceutical interventions. It is concluded that a structured CR program facilitates best practice and efforts need to be made to improve accessibility for rural and remote people.	**Excluded:** verifies importance of CR and the need to adhere to best practice guidelines. This is not the focus of the study.	
Ilton K, Walsh F, Brown H. et al	A framework for overcoming disparities in management of acute coronary syndromes in the Australian Aboriginal and Torres Strait Islander populations.	2014	Evidence based consensus statement		Demonstrates disparities in treatment of Aboriginal and Torres Strait Islander people who have acute coronary syndrome or have received treatment for cardiac disease.	**Excluded:** Not qualitative or quantitative research	
Jackson M, McKinstry B, Gregory S	A qualitative study exploring why people do not participate in cardiac rehabilitation and coronary heart disease self-help groups, and their rehabilitation experience without these resources	2012	**Qualitative** study (UK)that explored experiences of people recently hospitalised with coronary heart disease, and their "significant others", non-use of CR and experiences of recovery with-out these resources. A demographic profile of the group was included. Letters were sent to people who were discharged from hospital in a 6-14 month period. A sampling frame was designed to select a 'maximum variation' sample of people who indicated they were willing to be interviewed. Once agreed, an initial questionnaire was completed and followed by an in-depth interview.	Study in Lothian, Scotland. Sample: 163 people post MI were approached. 74 (45.4%) completed screening questionnaires and 53 (32.5%) consented to be interviewed. In-depth interviews were undertaken with 27 people post MI, and 17 'significant others' (total N = 44 or 25% of the total sample)	**Barriers to CR- actual and perceived:** CR not offered; no benefit; transport issues; dislike of groups; unnecessary; no benefit because of age and co-morbidities; not appropriate for their needs; work patterns; physical discomfort; judgmental staff attitudes: Lack of motivational support for instigating or maintaining lifestyle changes; Inadequate information and support with difficult emotions e.g. uncertainty, anxiety, difficulty accepting the MI and its consequences, sadness, and guilt. Depression, mood swings and irritability. **Enablers:** 'Heart Manual' home-based rehabilitation resource - increased their confidence in recovery; encouraged to manage independently. Perceptions change over time. Initially people may feel they don't need support, however over time this perception may change.		1, 3, 5, 7, 15, 16, 27, 28, 30, 31
McDonall, J. Botti, M. Redley, B. Wood, B.	Patient participation in a cardiac rehabilitation program	2013	An exploratory descriptive study involved linking 2 databases to analyse demographic and cardiac characteristics of patients who did or did not attend the CRP. .		Only 11.9% of patients attended the CRP. Predictors of attendance included marital status, gender, age, and proximity of the program to home. Conclusion: need of improve the referral process and recruitment structures to increase awareness of the program and the participation rate. Practices such as automatic referral and follow-up of patients are recommended.	**Excluded:** Metropolitan Victoria. Already well documented poor referral rates	

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Oldenburg B, Alati R, O'Connor, M el al	Knowledge of heart health by Aboriginal and Torres Strait Islander health workers (AHEs) in Queensland	2000	Review of knowledge and educational needs of AHWs in Queensland in 1994 - 1997		Before health workers can effectively become the most appropriate medium to deal with heart health problems in Indigenous communities, their educational needs, knowledge and current practices in heart health and heart disease prevention and cardiac rehabilitation, need to be improved.	**Excluded:** Outside of date limitations of the review. However issues raised continue to be important	
Pesut B Laberge C Sawatzky R	Understanding the landscape: Promoting health for rural individuals after tertiary level cardiac revascularization	2014	The study is based on an evaluation as part of the British Columbian quality assurance program.		Predominantly report post acute care outcomes. However the main reason cited for patients not attending cardiac rehabilitation in rural areas was availability of programs and distance.	**Excluded:** Very low focus on CR - predominantly clinical	
Pfaeffli Dale , Whittaker R, Dixon R.	Acceptability of a mobile health exercise-based cardiac rehabilitation intervention: a randomized trial	2015	**A quantitative** randomised control trial of 'Heart Exercise and Remote Technologies' that examined the effectiveness of health interventions to increase exercise behaviour in adults with IHD		Results demonstrated a positive improvement in exercise levels in the interventions compared with the control group (routine post discharge care)	**Excluded:** Only covers one aspect of CR. Not holistic.	
Redfern J, Briffa T, Ellis E.	Patient-centred modular secondary prevention following acute coronary syndrome: A randomized controlled trial	2008	**A quantitative** single-blind randomized controlled trial with 3-month follow-up included 2 groups (control and modular) and a contemporary non-randomized reference group participating in CR (2004 - 2005). The trial was based on the premise that, 1 All survivors of acute coronary syndrome (ACS) should participate in secondary prevention 2. incorporating risk factor management is an effective means for extending overall survival, reducing cardiovascular events, the need for coronary revascularization, and enhancing quality of life (QOL).3 The management of CHD involves the adoption of lifelong healthy behaviours underpinned by motivation and systematic support to consistently follow multidimensional treatment regimens. The program was designed as an individualized, case management approach, and involved treating physicians. this included a flexible guided-choice modular intervention for enhancing adherence with long-term interventions including establishing a therapeutic alliance, collaborative goal setting, and communication with referral and follow-up to appropriate risk factor reduction programs. The purpose of the clinical trial was to test whether a patient-centred modular approach to secondary prevention, compared with conventional care, would improve the coronary risk profile of patients who do not access CR after ACS. Quality of life and psycho-social factors were included in the profile.	3 groups 1} control group: randomly allocated ACS survivors not accessing CR but receiving conventional care (n = 72); 2) people who participated in risk factor modules on the basis of patient-centred care and collaborative goal setting to systematically lower risk factors; 3)a group of ACS survivors participating in CR (n = 64). Blinded measurements of risk factors and global risk were completed at baseline and 3 months.	The modular group demonstrated better results in all areas including physical function, general health, vitality social and emotional wellbeing and mental health. The difference between the modular group and the regular CR group was not as marked, with little difference in the physical categories some categories but the CR group demonstrating better results in general health, vitality social and emotional well-being and mental health. However it can be concluded that the modular model with support, is a viable alternative, although the mental health issues would need to be carefully considered. **Limitations:** The control group comprised those people who had no interest in CR, therefore, it can be assumed that those who agreed to participate in either the modular group or the conventional CR group were more motivated and therefore likely to achieve better results.. **Barriers:** work commitments, not percieved as necessary, no interest. **Enablers:** HB program and individual flexibility	**Excluded:** No rural or remote focus.	
Redfern J, Ellis E, Briffa T.	High risk-factor level and low risk-factor knowledge in patients not accessing cardiac rehabilitation after acute coronary syndrome	2007	**Quantitative** cross-sectional comparison in a tertiary hospital. Participants: Patients admitted to hospital with an acute coronary syndrome (ACS), residing within 20km of the hospital, and without severe comorbidity who did not access cardiac rehabilitation (NCR) were compared with a group about to commence standard cardiac rehabilitation (SCR). Main outcome measures: Risk-factor profile, knowledge of risk factors via face-to-face assessment, quality of life	Of the 446 patients eligible for cardiac rehabilitation, 208 attended for assessment. Final groups non CR: n = 144; Standard CR: n = 64		**Excluded:** Demonstrated effectiveness of CR. This is already well documented	

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SangsterJ, Church J, Haas M.	A comparison of the cost-effectiveness of two pedometer-based telephone coaching programs for people with cardiac disease	2015	**A quantitative economic evaluation** conducted alongside a randomised controlled trial designed to compare two new interventions. The two interventions considered are the Healthy Weight program that includes a combination of physical activity and nutrition education, information and telephone support, and the Physical Activiti program that is exercise focussed Both programs have telephone support.	This study is a "within trial" evaluation, thus providing information about the interventions and their impact on population sub-groups.	The Healthy Weight intervention was less costly and more effective compared to the Physical Activity intervention. The Healthy Weight intervention (i.e. longer program, additional phone calls and more aggressive guidelines for physical activity) possible improvement in quality of life, especially for participants in rural areas who did not attend CR. Telephone-delivered interventions can be both effective and cost-effective for improving physical activity and dietary outcomes for patients with chronic illnesses. This study showed that overall, and particularly people who live in a rural location or did not attend a CR program, the Healthy Weight intervention was less costly and more effective than the Physical Activity intervention. Estimated cost saving through reducing acute hospital admissions are significant	**Excluded:** Proposed research only - results not described.	
Sangster J. Furber S. Allman-Farinelli M	A population-based lifestyle intervention to promote healthy weight and physical activity in people with cardiac disease: the PANACHE (Physical Activity, Nutrition And Cardiac Health) study protocol	2010	**Quantitative**: Randomised controlled trial comparing the efficacy of a healthy weight telephone coaching intervention (intervention group) with a physical activity telephone coaching intervention (control group). Qualitative evaluation:			**Excluded:** proposed study only	
Sangster J, Furber S, Phongsavan P' et al	Where you live matters: Challenges and opportunities to address the urban–rural divide through innovative secondary cardiac rehabilitation programs	2015	Quantitative study: This paper examines the risk profile and participation in CR of rural and urban residents with cardiac disease who enrolled in a telephone coaching program.	Comparison of baseline characteristics of 173 urban and 140 rural Australians referred to CR, and who enrolled in a telephone-based coaching program.	Rural residents were more likely to enrol in a telephone coaching secondary prevention program (44.7% versus 25.5%) than urban residents. For those enrolling in the telephone-based program, rural participants were more likely to be of lower socio-economic status, be obese, to rate their health as fair or poor and less likely to be sufficiently physically active or follow a special diet for their heart compared with urban participants. More people in urban area attend accessible centre based CR.		5, 10, 16, 28
Scane, K. Alter, D. Oh, P.	Adherence to a cardiac rehabilitation home program model of care: A comparison to a well established traditional on-site supervised program	2012	**Quantitative** Retrospective audit of patient files and data base for both traditional and home based CR. Both programs included clinical and cardiopulmonary assessments, education, exercise counselling, and exercise progression. A review of symptoms, medications, goals, exercise, and risk factors occurred during each contact with their case manager in both programs. Both programs took a planned, best practice goals based approach which was monitored through diary records. Access to psychosocial and nutrition services were made available to all patients through individual appointments.	A retrospective review of a total of 200 men and women consecutively enrolled in a traditional centre based (TP), or home based (HP) CR programs in Toronto Canada.	The HP cohort had patients who were significantly younger, male, more geographically removed from the on-site centre, employed, and/or had greater cardiopulmonary fitness. Similar attendance and completion rates were seen between models. Both groups attained similar gains in cardiovascular fitness Analysis of adherence shows the HP to be a suitable option for patients who face barriers for TP-CR participation. possible bias with the HP group being younger and fitter at the beginning of the program. The main difference with the programs was that the TP attended a centre and the HP received telephone support to monitor their goals and provide support and counselling.		5, 10.
Shanmugasegaram S, Oh P Reid R.	A comparison of barriers to use of home-Versus site-based cardiac rehabilitation	2013	**Quantitative** cross-sectional, sociodemographic survey in-hospital, and clinical data were extracted from charts. A follow-up survey one year later, which included the CR Barriers Scale and the Physical Activity Scale for the Elderly. Participants were also asked whether they attended CR, the type of program model attended, and the percentage of prescribed sessions completed	Overall, 939 patients (51.9%) participated in CR, with 96 (10.3%) participating in a home-based program. Location throughout Ontario, Canada	**Barriers i**dentified include distance, cost and exercising on their own. energy, other health problems, , preference to take care of their own health, referral too late, other family responsibilities, "I don't need it, others don't have CR and they are fine". The doctor doesn't think it is necessary, too old, didn't know about CR, no follow-up from the CR centre after referral. The conclusions of the study are limited because of the low number of home-based CR participants, and therefore the findings cannot be generalised. However, all barriers identified are considered important. Because of the low number of home-based participants the conclusions are limited to between the groups and not generalisable		1, 5, 15, 16, 25.

Author	Title	Year	Study Design	Focus populations & environment	Findings including CR enablers, barriers and pathways	Excluded/Limitations	Codes
Shepherd F, Battye K, Chalmer E.	Improving access to cardiac rehabilitation for remote Indigenous clients	2003		baseline characteristics of 173 urban and 140 rural		**Excluded:** outside year of study limitation	
Turk-Adawi, K. I. Oldridge, N. B. Tarima, S. S.	Cardiac rehabilitation enrolment among referred patients: patient and organizational factors	2014	**Quantitative** study considering organizational data which was collected by CR program managers or coordinators via a Web-based survey. Patient data were collected by the CR staff at each facility by using the WiCORE Web-based questionnaire	telephone-based coaching program	Differences in the US systems including funding don't relate well to Australian situation. Poor Referrals are noted as being an issue common to both countries	**Excluded** not relevant to Australia rural and remote areas.	
Valencia H, Savage P, Ades P,	Cardiac rehabilitation participation in underserved populations	2011	Study relied on data from the National Medicaid Data base. Medicaid has eligibility criteria and is not a universal health coverage system as Medicare is in Australia. In US Medicare provides for health care of people over 65 years. Many of the barriers related to private health insurance and/or employer insurance. These are not major issues in Australia		Language difficulties with some immigrant groups have common issues in Australia. However CR is generally available in the public health system	**Excluded** not relevant to Australia rural and remote areas.	
Thompson S, DiGiacomo M, Smith J	Are the processes recommended by the NHMRC for improving Cardiac Rehabilitation (CR) for Aboriginal and Torres Strait Islander people being implemented?: An assessment of CR Services across Western Australia	2009	**Mixed method**, predominantly qualitative study which included quantifiable close-ended questions regarding awareness and implementation of the NHMRC Guidelines for CR for Aboriginal and Torres Strait Islander people, combined with semi-structured interviews, allowing for exploration of issues. The interviews were conducted by a CR nurse in conjunction with an Indigenous nurse. The inclusion of an Indigenous nurse in the visits was to assist with assessment of the CR service in terms of its cultural safety and as a strategy for Indigenous research capacity building within the research. All interviews were conducted face-to-face to enable assessment of the atmosphere and how "Indigenous-friendly" the environment was in terms of supporting culturally safe care, as well as ensuring interviewees were fully engaged during the interview. Visits also enabled opportunities for providing information and education to participants as a form of reciprocity. D57	The sampling frame for this study included public hospitals and community-based public CR services listed in the Directory of Western Australian Secondary Prevention Services. Participating programs were in rural settings (n = 10, 59%) and the metropolitan area (n = 7, 41%). Twenty-four interviews were conducted with participants from 17 tertiary hospitals and community-based public CR services.	**Barriers** Staff unfamiliar with the NHMRC Guidelines and therefore no implementation. No evidence of a systematic implementation or outcome assessment strategy across WA. Tensions between a standard approach to medical care and secondary prevention and the needs of Indigenous people. Need to developing integrated models of care. **Enablers:** Need to systematically address recommendations of the guidelines and factors identified in the discussions i.e. Improve awareness, communication, co-ordination and involvement of Aboriginal Community Controlled Health Services. Improve psychological and social services to address the complex interplay between physical and mental concerns in Indigenous health. Consider transportation and family commitments when planning CR for Indigenous people. Make efforts to link Indigenous family, community education and interventions with follow-up and support in order to improve secondary prevention. Increase efforts to strengthen the competencies of health staff to work with disadvantaged clients in order to engage Indigenous people in CR. Health management support for policy and practice. Discharge processes lacking with Indigenous people often not identified. Need for the local community to be informed about the estimated time of arrival of the local person in their community. Greater awareness of services and strategies considered to reduce staff turnover and staff shortages.		1, 5, 12, `3, 16, 28, 32, 33.
Vandelanotte C, Dwyer T, Van Itallie A.	The development of an internet-based outpatient cardiac rehabilitation intervention: a Delphi study	2010	**Quantitative** three-round Delphi study among cardiac rehabilitation experts was conducted and included on-line questionaries of i)open ended questions, ii) structured (five-point Likert scale scale)questions based on the results of i), and iii) structured questions repeated after response analysis of previous questionaries	42 "experts" - not defined??	The study concluded that development and implementation of an Internet-based outreach cardiac rehabilitation program is feasible, needed and as a valuable alternative for face-to-face programs. NB "cardiac rehabilitation experts" is not defined in this paper but is assumed to be medical cardiac specialists and CR co-ordinators, but this cannot be confirmed	**Excluded: opinion piece.** Reasonable information about the need for alternate approaches for people in rural and remote areas to enable them to access CR	5, 10.

Author	Title	Year	Study Design	Focus populations & environment	Findings including CR enablers, barriers and pathways	Excluded/Limitations	Codes
Varnfield M, Karunanithi M, Sarala A.	Uptake of a technology-assisted home-care cardiac rehabilitation program	2011	Questionnaires provided feedback from mentors and patients together with preliminary data from patients' entries in the Wellness Diary Connected web portal database. At the commencement of the trial, mentors were asked to fill in questionnaires on the benefits and usability of the technology, as well as any disadvantages (e.g., anxiety about using the technology). No detail of sampling or methodology for analysis provided		**Findings:** Concerns raised by mentors were lack of supervision while patients exercised, individual motivation levels, and patients missing out on the support that group participation provides. Reasons for not using the Wellness Diary Connected were mainly not having a computer or internet access. Most of the participants (91%) reported that phone consultations with mentors motivated them to meet their goals	**Excluded:** Good background information about the benefits of telephone support . No barriers or enablers discussed or information provided about numbers who accessed the program and those who declined and why	
Wachtel T,	Preferred Models of Cardiac Rehabilitation in Rural South Australia from a Health Consumer's Perspective	2011	**Mixed method** cross-sectional, descriptive pilot study to examine preferred models of CR in the Riverland Region, SA from the perspective of local health consumers. Data collection was through a questionnaire. Potential participants were approached at a large shopping centre and several of the lawn-bowls sporting facilities in three of the five major Riverland towns	Subjects: Convenience sample of 40 (17 male) health consumers from the Riverland, SA	**Barriers** to various CR models included not using computers, distance to existing regional CR programs, not supportive of home based programs or home visits by a cardiac nurse. With a total of 22 respondents, and a convenience sample, and data collected over 2 half days the conclusions are limited to distance to CR being a major barrier and the need for flexibility of programs in order to improve access for people living in rural and remote areas	**Excluded:** questionnaire not pilot tested, responses may not accurately reflect the views of the participant. Sampling likely to be skewed towards the older age group. i.e. there over 75 year age group and women were the largest groups in the study. This does not reflect the profile of the general CR population in which the numbers attending in the over75 age group and women are usually the smaller groups	
Wakefield B, Drwal K, Scherubel M.	Feasibility and effectiveness of remote, telephone-based delivery of cardiac rehabilitation (Mid-West USA).	2014	**Mixed method:** Cross-sectional descriptive study comparing uptake patient and provider), effectiveness (safety and clinical outcomes) and implementation (time and costs) of home-based, telephone support CR with traditional centre based programs. Participants were recruited from all areas within the hospital that treated people with heart disease. Recruitment was augmented with the use of posters with program criteria and contact information placed on the inpatient floors in the physician workrooms, monthly attendance at orientation meetings for new resident physicians staffing in patient wards, and regular visits to areas most likely to have eligible patients.. 533 potential participants were identified, with 426 excluded by their medical practitioner. 45 refused any form of CR leaving 62 who participated - 14 centre based and 48 home based	Remote CR participants (n=48) were compared with those for face-to-face CR program participants (n=14).	No significant difference was reported in any of the measurable outcomes, e.g. attendance, risk factors and satisfaction with the program. However the contentious issue is the number excluded by their medical officer. It seems reasonable to argue that flexible programs should be able to accommodate a greater proportion of people post cardiac event and the reasons for MO excluding people from CR needs to be further explored	**Excluded**: criteria: already high level of evidence that home based CR is as effective and acceptable to participants as centre based.	
Worringham C, Rojek A, Stewart I.	Development and feasibility of a smartphone, ECG and GPS based system for remotely monitoring exercise in cardiac rehabilitation	2011	develop a system to enable walking-based cardiac rehabilitation in which the patient's single-lead ECG, heart rate, GPS-based speed and location are transmitted by a programmed smartphone to a secure server for real-time monitoring by a qualified exercise scientist. The feasibility of this approach was evaluated in 134 remotely-monitored exercise assessment and exercise sessions in cardiac patients unable to undertake hospital-based rehabilitation	134 in feasibility study - N - 6 in intervention study.	concluded that remote smartphone, IT based monitoring and CR are feasible and need further exploration. However poorly set up study and weak research methods	**Excluded:** research method not described	

Codes							
1. pathways/transition of care/referral/eligibility			9. non completion of programs		17. abandoning medical advice & using alternate therapies	25. GPs one stop shop and/or not supportive of CR	
2. health prof as liaison and facilitators			10. alternate programs (include Heart Health Manual; telephone support and telemedicine); structured support - flexible format.		18. difficulties in changing risky behaviour e.g. families continuing to smoke	26. funding	
3. support groups (barrier and enabler)			11. program specific for Aboriginal people.		19. community activities e.g. walking groups, healthy cooking classes; using	27. staff judgemental	
4. framework or plan of care			12. Aboriginal people involved		20. opportunistic casual minimal interventions in any environment e.g. supermarket; home visits;	28. psycho-social - depression, anxiety, denial, sadness guilt, grief, motivation	
5. geographic distance and/or transport			13. Aboriginal cultural awareness		21. involving ambulance officers in CR programs	29. non conventional CR and cost effectiveness	
6. poor IT access or skills			14. yarning and flexibility		22. lobbying restaurants to provide healthy food choices;	30. CR unnecessary	
7. decline opportunity for CR			15. work preventing attendance		23. develop automatic referral/information /education system	31. co-morbidities: barrier to attendance	
8. women under represented			16. costs e.g. travel, medications, consultations with health professionals,		24. communication with other services and health professionals	32. educations levels and social vulnerability	
	Themes: i) referral, health service pathways and planning. ii) Alternate & flexible programs including cultural			iii) Professional roles and influence iv) knowledge, values, costs (personal and health service)		33. Poor health services standards	

Author	**Title**	**Year**	**Study design**	**Focus populations numbers & environment**	**Findings including CR enablers, barriers and pathways**	**Exclusion/limitations**	**Codes**
Redfern J	Expanded cardiac rehabilitation reduces cardiac events over five years.	2011	**Quantitative r**andomised, controlled trial with intention-to-treat analysis	Randomisation of 224 participants: 111 into expanded cardiac rehabilitation, 113 control group. Urban based.	demonstrated improved long term benefits of expanded CR - including stress management, cooking and diary education, residential stay and physical training	**Excluded** - no rural or remote factors. Very specific to urban environment. Useful background information	
King G, Farmer J.	What older people want: evidence from a study of remote Scottish communities.	2009	**Qualitative** study using focus groups and thematic analysis	N23 age range 55 - 82 years living indecently at home in rural Scotland	**Findings:** suspicious of technical efficiency. Health and care services are inter-linked with other aspects of rural living, including transport and housing. Proximity to family for social and domestic support only; health and related support should be from generic service providers. Community members were involved in reciprocal help-giving of many types	**Excluded** -no focus on CR. However useful background and insight into the views of older people living in rural areas.	
Fornal C,	A Woman's Dilemma: Cardiac Rehabilitation Barriers	2011	**Literature review** - using CINAHL data base.		**Barriers identified:** transportation issues, financial problems, psychological factors, physical ailments, having exercise equipment at home, and time constraints. **Enabler** the need for increased education in order for women to fully understand the benefits of CR	**Excluded:** limited search, only one data base - CINAHL. and not specific to rural and remote populations. However good insights into barriers specific to women.	
Taylor K, Smith J, Dimer L, Ali M, Wilson N, Thomas T, Thompson S.	" You're always hearing about the stats... death happens so often": new perspectives on barriers to Aboriginal participation in cardiac rehabilitation	2009	**A qualitative stud**y using convenience & purposeful sampling and semi-structured interviews was conducted to examine barriers to cardiac rehabilitation (CR)	Sample comprised 15 Aboriginal cardiac patients (7 women and 8 men aged 31-74 years) from Perth WA. November 2007-March 2008	**Findings and barriers:** i)challenges associated with extended family responsibilities. ii)sociocultural inappropriateness of the program. iii) poor knowledge of CR. iv) the connection between colonialism and health services. v) media heart health messages, dire statistics and the younger age of the affected Aboriginal population result in people being constantly reminded of, and coming to expect, poor health outcomes. Dominant theme in the Australian media of Aboriginal fatality and futility discussed, heart health messages were often disempowering, negatively affecting motivation to engage with health programs, reinforced by regular attendance at funerals for Aboriginal people, who die very prematurely from CVD. This highlights the need for a shift in media and public health campaigns from 'shocko' headlines and statistics to a focus on strengths and successes, inspiring the groups involved and supporting them to make changes.		10, 11, 13, 32.
Redfern J, Briffa T, Ellis E, Freedman S.	Choice of secondary prevention improves risk factors after acute coronary syndrome: 1-year follow-up of the CHOICE (Choice of Health Options In prevention of Cardiovascular Events) randomised controlled trial	2008	**Quantitative RCT** with the CHOICE group participated in a brief, patient-centred, modular programme of a clinic visit plus telephone support, cholesterol lowering and tailored preferential risk modification. The control group participated in continuing conventional care but no centrally coordinated secondary prevention.	Intervention group n =72 with control group n=72. Sydney metropolitan hospital.	**Findings:** This trial focussed on the majority of ACS survivors not accessing rehabilitation and demonstrates that the brief CHOICE intervention is an **enabler** because of the proactive nature of the program in which people are followed up and their health and risk factors discussed, rather than asking people to be involved in a "program" and with support were largely self -directed. This may be key to successful interventions. CHOICE resulted in improvement in multiple risk factors and related knowledge compared with usual care for at least 1 year. The CHOICE intervention included medically directed strategies and self-management options according to personal preference and circumstances. The trial concluded that improving risk factor knowledge is positively associated with improved risk factor levels, enhanced patient active orientation, better health status and QoL, suggesting that fostering patient active engagement is associated with improved health outcomes	**Excluded:** No **r**ural and remote issues explored. But it would seem that the model has potential to improve risk factor management for people in rural and remote areas.	2, 14, 10, 20, 28.

Author	Title	Year	Study design	Focus populations numbers & environment	Findings including CR enablers, barriers and pathways	Exclusion/limitations	Codes
Devi R, Singh SJ, Powell J, Fulton EA, Igbinedion E, Rees K	Internet Based Interventions for Secondary Prevention of Coronary Heart Disease -A Cochrane Based Systematic Review.	2015	Cochrane based systematic review - Internet based interventions for Secondary prevention of CHD.	11 completed trials (12 publications)	**Findings** Inconclusive, with little or no benefit being demonstrated between internet based interventions, standard rehabilitation, or no intervention. However no adverse effects of Internet-based interventions were observed. Some internet programs showed good results in weight loss. 60% of people eligible for CR reported to have internet access and have the skills to be able to utilise an internet program Neubeck L, Ascanio R, Bauman A et al. (2011).There is sound evidence that telephone based interventions are effective	**Excluded - background information:** This study is significant, however does not focus specifically on rural and remote areas. It is known that internet access in R & R areas of Australia is variable and at times unreliable. . The Cochrane reviewers refer to the Neubeck study which finds that 60% of people who are eligible for CR have a computer and skills to use for internet programs. Whilst this further reduces the already low numbers of people who have access to CR further information is needed about this number today, given that internet access is increasing and as people with greater computer literacy get older the number likely to effectively use on line CR can be anticipated to increase.	
Meillier L, Nielsen K, Larsen F, Finn B, Mogens L	Socially differentiated cardiac rehabilitation: Can we improve referral, attendance and adherence among patients with first myocardial infarction?	2012	**Quantitative** RCT. The aim of the study is to improve referral, attendance, and adherence rates among socially vulnerable patients by systematic screening and by offering a socially differentiated cardiac rehabilitation programme. People over 75 years and with severe co-morbidities were excluded but provided with telephone and home visits.	Intervention group N 141 (extended CR), control standard CR N 135. Denmark.	**Findings:** The current study suggests that social inequality in referral, admittance, and adherence to the CR can be dealt with by systematic referral and a socially differentiated individualised approach. A systematic screening procedure can help find all eligible patients and support the staff to refer all of them to the relevant programme. It is possible to develop and use a simple screening tool to form patient groups for socially differentiated CR. Retention rates for the extended programme were high. **Conclusion** It is possible to motivate low-educated and socially vulnerable patients to adhere to an individually and socially differentiated CR.	**Excluded:** did not include rural and remote populations however findings are potentially applicable to rural and remote populations and Aboriginal and Torres Strait Islander People.	
J Blair J, Corrigall H, Angus N, Thompson D, Leslie S.	Home versus hospital Based Rehabilitation - a systematic review	2011	All but 3 articles reviewed in the study were outside the date limitations of this study	22 studies reviewed	All studies demonstrated that home-based CR is equally if not more effective than traditional CR. The barriers for not attending any CR were not addressed	Excluded as per exclusion criteria	

Codes						
1. pathways/transition of care/referral/eligibility		9. non completion of programs			17. abandoning medical advice & using alternate therapies	25. GPs one stop shop and/or not supportive of CR
2. health prof as liaison and facilitators (barrier and enabler)		10. alternate programs (include Heart Health Manual; telephone support and telemedicine); structured support - flexible format.			18. difficulties in changing risky behaviour e.g. families continuing to smoke	26. funding
3. support groups (barrier and enabler)		11. program specific for Aboriginal people.			19. community activities e.g. walking groups, healthy cooking classes; using media to promote healthy behaviour; involve local gyms,	27. staff judgemental
4. framework or plan of care		12. Aboriginal people involved from a clinical/support perspective			20. opportunistic casual minimal interventions in any environment e.g. supermarket; home visits;	28. psycho-social - depression, anxiety, denial, sadness guilt, grief, motivation
5. geographic distance and/or transport		13. Aboriginal cultural awareness			21. involving ambulance officers in CR programs	29. non conventional CR and cost effectiveness
6. poor IT access or skills		14. yarning and flexibility			22. lobbying restaurants to provide healthy food choices;	30. CR unnecessary
7. decline opportunity for CR		15. work preventing attendance			23. develop automatic referral/information /education system	31. co-morbidities: barrier to attendance
8. women under represented		16. costs e.g. travel, medications, consultations with health professionals,			24. communication with other services and health professionals	32. educations levels and social vulnerability
	Themes: i) referral, health service pathways and planning. ii) Alternate & flexible programs including cultural			iii) Professional roles and influence iv) knowledge, values, costs (personal and health service)		33. Poor health services standards

Authors	**Title**	**Year**	**Study type**	**Focus populations numbers & environment**	**Findings including CR enablers, barriers and pathways**	**Exclusion/limitations**	**Codes**
Ski C, Vale M, Bennett G, Chalmers V, McFarlane M, Jelinek M, Scott I, Thompson D.	Improving access and equity in reducing cardiovascular risk: the Queensland Health model	2015	Descriptive statistics comprised means and standard deviations for continuous variables (clinical profiles e.g. lipids, BP, and risk factors e.g. smoking and alcohol and numbers and percentages for categorical variables.	2 cohorts -CHD: 1962; type 2 diabetes: 707. Inclusion in the study by referral from hospital clinicians	**Findings:** the Coaching on Achieving Cardio-vascular Health Program (COACH) is a viable alternative to traditional centre based CR programs	**Excluded:** Good background information **-** no information given on barriers or enablers or about % of the total eligible population not referred. Also there are gaps in data due to non-attendance to GP or GPs not following best practice guidelines. Some risk factors e.g. smoking and alcohol consumption were self reported by the participant and not able to be verified.	.
Scalvini, S Zanelli, E Comini, L Dalla T et al.	Home-Based Versus In-Hospital Cardiac Rehabilitation After Cardiac Surgery: A Nonrandomized Controlled Study	2011	. The purpose of this study was to compare exercise capacity after home-based cardiac rehabilitation (HBCR) or in-hospital rehabilitation in patients at low to medium risk for early mortality (EuroSCORE 0–5) following cardiac surgery. Design. A quasi-experimental study was conducted.			**Excluded:** Exercise focused not comprehensive model. Demonstrates that home base with telephone support is as effective as traditional CR. No barriers or enablers	

Authors	Title	Year	Study type	Focus populations numbers & environment	Findings including CR enablers, barriers and pathways	Exclusion/limitations	Codes
Redfern J, Maiorana A, Neubeck L, Clark A, Briffa T.	Achieving coordinated secondary prevention of coronary heart disease for all in need (SPAN)	2011	Descriptive article on a proposed model of care.		Article describes a united organisation of care that aims to facilitate coordinated secondary prevention for all in need (SPAN). SPAN is inherently flexible yet provides a minimum level of health service standardisation. It can be delivered across any area health service regardless of a patient's age, gender, ethnicity, geographical location, or socioeconomic status. Importantly, the setting, communication technologies and components of each patient's care are governed and woven into continuing care provided by the family physician in concert with a cardiac care facilitator.	**Excluded:** background material, not research	
Hamilton S, Mills B, McRae S.	Cardiac Rehabilitation for Aboriginal and Torres Strait Islander people in Western Australia	2016	**Mixed methods** study of Cardiac rehabilitation and Aboriginal Medical Services using Semi-structured interviews with CR coordinators that included questions specific to Indigenous people.	Cardiac rehabilitation and Aboriginal Medical Services (n = 38) were identified for interview through the Heart Foundation Directory of Western Australian Cardiac Rehabilitation and Secondary Prevention Services 2012.	**Findings:** Indigenous Australians are under-represented in participating in CR. A good systematic data collection across services necessary to ensure that Indigenous Australians are identified and that health pathways ensure continuity of care and that alternative methods of CR delivery with dedicated resources are considered.		1, 2, 10, 12, 13, 14, 16.
Clark A, King-Shier K, Duncan A et al	Factors influencing referral to cardiac rehabilitation and secondary prevention programs: a systematic review Show all authors	2013	A Canadian systematic review using qualitative meta-synthesis with a focus on post hospital discharge patient referral to CR.	A comprehensive search of 11 databases was conducted. To be included, studies had to contain a qualitative research component wholly or in a mixed method design.	**Findings**: Patients rarely remembered being given information on CR when they were in hospital. Medical staff were often barriers to CR, at times deeming it unnecessary and lacking understanding of CR programs and the need. Other barrier identified included: no reimbursable items for referrals, fear that a patient being involved in a CR program would negatively influence the doctor/patient relationship, insufficient resources for a CR program and financial barriers prevented patients from attending	**Excluded:** Significant barriers to referring to CR were identified through this meta-analysis and need further exploration. The Articles' reference list was reviewed. Many articles have similar conclusions to those already reviewed in this work. It is considered that "saturation" of contemporary information about barriers/ enablers, and pathways for rural and remote and Aboriginal and Torres strait Islander populations has been achieved.	1, 2 (barrier), 24, 25. 26, 30.
