Thirty Years Experience in a Rural Cardiac Rehabilitation Program: How the patient journey has changed

Jacobs D, Young-Whitford A, Campbell N

Diane.Jacobs@swsahs.nsw.gov.au

Bowral & District Hospital Mona Road Bowral NSW 2576

Mr R ~ CRP Patient 1989

Mr R was a salesman, born in 1932, living in the Southern Highlands of New South Wales with his wife. His first cardiac event was an acute myocardial infarction (AMI) and Coronary Artery Bypass Grafts (CAGs) in 1978. There was no Cardiac Rehabilitation Program (CRP) available at that time in rural NSW.

CARDIAC REHABILITATION PROGRAM 1		February 1989
DIAGNOSIS AMI Angiography – SVG restenosis for medical management Paroxysmal AF COMORBIDITIES GORD	RISK FACTORS Previous history – CAGs 14yrs Hyperlipidaemia Smoking	REFERRALS Smoking Cessation – tertiary facility
PROGRAM	ENTRY	EXIT
Exercise Stress Test	3 METS	11 METS
LIPIDS	TC 7.3; trig 1.7	Not done
Weight	84kgs	85kgs
MEDICATIONS	aspirin enalapril ranitidine mucaine diazepam	aspirin metoprolol ranitidine
GOAL SETTING:	Not considered	
PROGRAM EVENTS: EPS for Atrial Fibrillation		
OUTCOMES: Returned to work		

CARDIAC REHABILITATION PROGRAM 2		March 1991
DIAGNOSIS Unstable Angina Persistent AF COMORBIDITIES GORD	RISK FACTORS Previous history – CAGs 16yrs Hyperlipidaemia Smoking	REFERRALS None
PROGRAM	ENTRY	EXIT
Exercise Stress Test	3 METS	10 METS
LIPIDS	TC 7.5	Not done
Weight	84kgs	85kgs
MEDICATIONS	aspirin atenolol ranitidine	aspirin metoprolol ranitidine
GOAL SETTING:	Not considered	
PROGRAM EVENTS: Cardiac echo – no LVH		
OUTCOMES: Returned to work		

Mr W ~ CRP Patient 2015

Mr W was a retired builder, born in England in 1945. He was living with his wife in an outlying village in the Southern Highlands. His first cardiac event was a NSTEMI in 2010.

CARDIAC REHABILITATION PROGRAM 1		October 2010
DIAGNOSIS Non STEMI → tertiary facility angiography → diffuse CAD/mod AS → high risk, single vessel PCI APO ARF Cachexia COMORBIDITIES CVA; cerebellar lesion; cervical myelopathy; laminectomy; GORD; OA; osteoporosis; acquired auto immune deficiency disease; BPH	RISK FACTORS Hyperlipidaemia Hypertension Type II Diabetes Mellitus Sedentary Ex smoker – 4O years	REFERRALS Dietician Occupational Therapy for home modification Ax ACAT – respite GP for GP Management Plan, TCA, Mental Health Care Plan Diabetes Educator Podiatrist Psychologist Exercise Physiologist
PROGRAM	ENTRY	EXIT
Exercise Stress Test	2 METS	5 METS
LIPIDS	TC 6.0; trig 3.2; HDL 0.8; LDL 3.7	TC 3.4; trig 0.7; HDL 1.0; LDL 1.7; HbA1c 6.0
BMI/W:H/Waist	18/0.98/84cm	23/0.95/88cm
MEDICATIONS	ASA, clopidogrel metoprolol irbesartan atorvastatin fluconazole metformin caltrate paracetamol raltegravir tenofovir/emtrivatobir amitriptylline	coplavix metoprolol esomeprazole atorvastatin fluconazole metformin caltrate paracetamol raltegravir tenofovir/emtrivatobir amitriptylline
GOAL SETTING:	Maintain independence, improve mobility , increase weight, no respite	All goals achieved
PROGRAM EVENTS: nil		
OUTCOMES: Home based exercise daily – resistance and aerobic, cardiac symptom free , DASS 21 WNL, action plan in place, discharge Ax completed, goals/guidelines met Medical follow up with cardiologist, gastroenterologist, infectious disease, immunologist, renal physician, neurologist, endocrinologist		

CARDIAC REHABILITATION PROGRAM 2		December 2014
DIAGNOSIS NSTEMI – pre op CAGs AVR →outpatient Ax as inoperable → medical management COMORBIDITIES CVS; cerebellar lesion; cervical myelopathy; laminectomy; GORD; OA; osteoporosis; acquired auto immune deficiency disease; BPH	RISK FACTORS Hyperlipidaemia Hypertension Type II Diabetes Mellitus Sedentary Ex smoker – 40 years Depression	REFERRALS Cardiac Chronic Care Program Dietician
PROGRAM	ENTRY	EXIT
6 Minute Walk Test	220 metres/no rests	247 metres/no rests
LIPIDS	TC 4.5; trig 3.0; HDL 0.9; LDL 2.1; HbA1c 6.0	TC 4.1; trig 2.6; HDL 0.9; LDL 2.0
BMI/Waist	22/87cm	23/89cm
MEDICATIONS	coplavix metoprolol esomeprazole atorvastatin fluconazole metformin caltrate paracetamol raltegravir tenofovir/emtrivatobir amitriptylline	coplavix metoprolol esomeprazole atorvastatin fluconazole metformin caltrate paracetamol raltegravir tenofovir/emtrivatobir amitriptylline
GOAL SETTING:	return home – independent with personal care	
PROGRAM EVENTS: Admitted with fall → SAH, non surgical Rx, superficial haematoma →resumed Cardiac Rehabilitation Program		
OUTCOMES: Respite in metropolitan area whilst wife overseas for two months. During respite →ACS→ readmitted to different tertiary facility with AMI		

Cardiac Rehabilitation Program Profile ~ 1989

Patient Referral:
Specialist Medical Officers, self referral, family/carers, public and private facilities

Referral and Prioritisation:
Medical/nurse discretion

American Association of Cardiovascular and Pulmonary Rehabilitation – Guidelines for Cardiac Rehabilitation Program / NSW Department of Health – Framework for Cardiac Rehabilitation

Admission Diagnoses:
Acute Myocardial Infarction (AMI), Cardiothoracic Surgery, Cardiomyopathies – low risk, Medically Managed Coronary Artery Disease (CAD), High Risk for CAD

Program Entry:
Physician supervised Exercise Stress Test (EST) Copy to GP

Initial Assessment:
Cardiac Risk Factor assessment; co morbid conditions; occupation, mobility, sport/recreation, daily activities, transport requirements, social work and dietician referral
Individualised program – negotiated sessions

Exercise Sessions:
6 week program; cardiac monitoring for duration of program; individualised graded exercise sessions including treadmill, upright bike, arm ergometer, home walking program

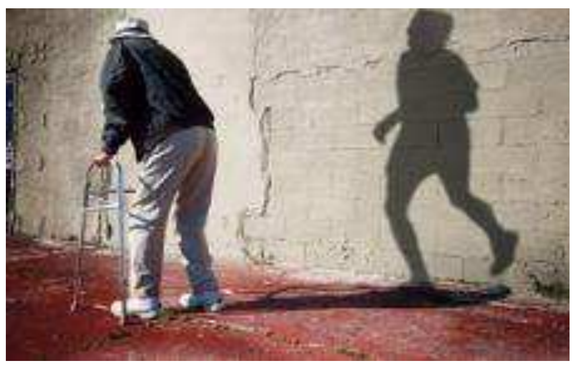
Education Sessions:
Nurse delivered, evidence based sessions
Anatomy & Physiology of the Heart, Diet (2 Part), CPR (NSW ambulance), Medications, Risk Factors for the Heart

Psychosocial Support:
Carer/family inclusion and support, social work referral, return to driving and transport support; return to work planning

Program Exit:
Physician supervised EST; 6/12 month EST scheduled
Phase 3 – home walking program
Certificate of Completion for patient

Transition of Care (TOC):
Copy of post program EST to GP

Data Collection:
Patient Outcome Measures at completion of program



Cardiac Rehabilitation Program Profile ~ 2017

Patient Referral:
Specialist Medical Officers, General Practitioners, electronic referrals, self referral, family/carers, public and private facilities, Aboriginal Health Service, disease specific chronic care programs
Documentation of interventions on eMR

South Western Sydney Local Health District: Cardiac Ambulatory Services (CAS) Referral and Priority Pathway:
Guides CAS staff to prioritise entry into a program. All eligible patients must be offered referral to a CAS which best suits the patient's individual needs, as soon as possible after diagnosis or before discharge from hospital

Australian Cardiovascular Health and Rehabilitation Association (ACRA) Guidelines:
ACRA seeks to provide guidance on the latest evidence in cardiovascular disease secondary prevention and cardiac rehabilitation. Clinicians should use these core components to guide effective service delivery and promote high quality evidence based care

Admission Diagnoses:
Acute Myocardial Infarction (AMI), Non-revascularisation Cardiothoracic Surgery, Revascularisation Procedures, Arrhythmias, Cardiomyopathies, Implantable Cardioverter Defibrillators, Permanent Pacemaker Implantation, Ablation, Medically Managed Coronary Artery Disease (CAD), Transcatheter Aortic Valve Implant, High Risk for CAD, Familial Hypercholesterolemia

Program Entry:
Electronic discharge summaries, Health Summaries, GP Management Plans (GPMP), ACAT assessment;
Physician supervised Exercise Stress Test (EST) /6 Minute Walk Test (6MWT);
Letter of participation to GP – requesting copy of GPMP

Initial Assessment:
Cardiac Risk Factor assessment – National Heart Foundation guidelines; Chronic Disease Self Management and goal setting; co morbid conditions; psychological screening; obstructive sleep apnoea screening; medication compliance; resumption of sexual activity; mobility; dietician, occupational therapy and physiotherapist referral; health coaching
Offering alternative model of service delivery – home visits; negotiated sessions; phone based follow up

Exercise Sessions:
8 week program; cardiac monitoring initially and as indicated; individualised graded exercise sessions including treadmill, upright bike, reclining bike, arm ergometer, combination arm/bike, upper body resistance training; University of Wollongong Exercise Physiology students on clinical placement contribute to exercise prescription and support

Education Sessions:
Multidisciplinary delivery and evidence based – nurse, dietician, pharmacist, mental health, social work
The Heart, Tests & Procedures; Healthy Eating (2 part); Risk Factors for the Heart; Exercise & Physical Activity; Mind & Heart; Medications; Managing My Heart Health; use of technology

Psychosocial Support:
Carer/family inclusion and support, repeat psychological screening and referral per clinical pathway and ongoing monitoring as required, support services in place or required, return to driving & transport support; occupation/return to work planning, advance care planning

Program Exit:
Physician supervised EST/6 MWT
Discharge Assessment – copy to patient, includes goals/guidelines met, shared care planning
Chest pain/heart failure action plans in place

Transition of Care (TOC):
Discharge Assessment - copy to GP; medical follow up in place; referrals in place
Documentation on eMR
Electronic message centre – identifies readmissions, follow up as appropriate
Invitation to Hearts in the Highlands support group

Data Collection:
Minimum dataset and key performance indicators (KPIs)
Patient Reported Outcome Measures (PROMs) 6 and 12 month follow up
Bowral CRP Access Database developed in 1997 – currently 2176 patients

The Bowral & District Hospital Cardiac Rehabilitation Program (CRP) enrolled their first patient in March 1986. Advancements in medicine since that time are resulting in patients surviving their cardiac event and living longer, often with multiple and complex co morbidities. Whilst many elements of the CRP have changed over time, our focus remains dedicated to person centred care.

In the 1980s, core components of CRPs were based on American Guidelines and a broad framework provided by the NSW Department of Health. Current practice is guided by recommendations from professional bodies such as the Australian Cardiovascular Health and Rehabilitation Association and guidelines from the National Heart Foundation. South Western Sydney Local Health District wide eligibility criteria guide the referral and prioritisation of patients enrolling in cardiac ambulatory care programs.

These case studies follow two patients participating in CRP, one from 1989 and one from 2015, highlighting the changing landscape of the patient journey.

CARDIAC REHABILITATION PROGRAM 3		April 1992
DIAGNOSIS AMI Redo CAGs Persistent AF COMORBIDITIES GORD	RISK FACTORS Previous history - CAGs 17yrs, AMI 3yrs - SVG restenosis Hyperlipidaemia Ex smoker - self reported	REFERRALS None made
PROGRAM	ENTRY	EXIT
Exercise Stress Test	5 METS	10 METS
LIPIDS	TC 7.9	Not done
Weight	89.5kgs	87.5kgs
MEDICATIONS	aspirin sotolol ranitidine	aspirin metoprolol ranitidine
GOAL SETTING:	Not considered	
PROGRAM EVENTS: Extended program 3/12, diagnosed with PVD and emphysema Sternal wound infection, cardioversion for AF – unsuccessful		
OUTCOMES: Returned to work		

CARDIAC REHABILITATION PROGRAM 4		November 1998
DIAGNOSIS Unstable Angina Heart Failure Persistent AF COMORBIDITIES GORD PVD Depression	RISK FACTORS Previous history - CAGs 23yrs, Redo CAGs 6yrs AMI 9yrs - SVG restenosis Hyperlipidaemia Ex smoker - 14yrs	REFERRALS None made
PROGRAM	ENTRY	EXIT
Exercise Stress Test	4 METS	10 METS
LIPIDS	TC 3.5; trig 0.98; HDL 1.34; LDL 1.7	Not recorded
Weight/W:H	82kgs/0.92	78kgs/0.94
MEDICATIONS	cardiprin sotolol lanoxin adalat orus pravachol nizatidine moclobemide	cardiprin sotolol lanoxin adalat orus pravachol coumadin nizatidine moclobemide
GOAL SETTING:	"To get fit"	Increased exercise tolerance Walking daily
PROGRAM EVENTS: CT scan – diagnosed with aortic arch atheroma – commenced on coumadin		
OUTCOMES: Retired from work, walking daily ½ hr		

Mr R was monitored throughout his cardiac history by a General Physician. He had his last EST in 2005 and at that time he had intractable angina and severe left ventricular dysfunction. He died at home from a sudden cardiac event at 74yrs.

CARDIAC REHABILITATION PROGRAM 3		September 2015
DIAGNOSIS NSTEMI – angiography tertiary facility →CAGs /AVR Post op Complications: 6/52 admission – respiratory failure; UTI with delirium; hypotension; significant weight loss; severe anaemia, paroxysmal AF; recurrent falls; wound infection; electrolyte imbalance COMORBIDITIES CVA; cerebellar lesion; cervical myelopathy; laminectomy; GORD; OA; osteoporosis; acquired auto immune deficiency disease: BPH; depression	RISK FACTORS Hyperlipidaemia Hypertension Type II Diabetes Mellitus Sedentary Ex smoker – 40 years Depression	REFERRALS Cardiac Chronic Care Program Connecting Care Program ComPacks Dietician OT – home modification and functional Ax Community Health Nurse – wound care Home medicines review
PROGRAM	ENTRY	EXIT
6 Minute Walk Test	222 metres/no rests/4WW	316 metres/no rests/4WW
LIPIDS	TC 3.4; trig 3.0; HDL 0.9; LDL 2.1; HbA1c 6.0	TC 3.8; trig 2.6; HDL 1.0; LDL 1.6
BMI/Waist	20/85cm	24/89cm
MEDICATIONS	coplavix apixaban bisoprolol pantoprazole rosuvastatin perindopril frusemide fluconazole metformin caltrate paracetamol raltegravir tenofovir/emtrivatobir amitriptylline	coplavix dabigatran bisoprolol pantoprazole rosuvastatin perindopril fluconazole metformin caltrate paracetamol raltegravir tenofovir/emtrivatobir amitriptylline
GOAL SETTING:	Return to driving; return to work – part time consultancy	Return to work, however not given medical clearance for driving
PROGRAM EVENTS: Admitted to tertiary facility with AF and drug interaction →resumed Cardiac Rehabilitation Program		
OUTCOMES: Home based exercise daily – resistance and aerobic, cardiac symptom free , DASS 21 WNL, action plan in place, discharge Ax completed, goals/guidelines met Medical follow up in place		

Mr W continues to live independently with his wife. He has had a further admission to hospital with CCF. He describes effective self management strategies, including action plans. At a recent follow up he reports that his goal is still to return to driving. He is exercising daily and cardiac symptom free.

References

National Heart Foundation of Australia NSW Division (1997) How to Plan a Cardiac Rehabilitation Program. National Heart Foundation of Australia.

Woodruffe, S. et. al. Australian Cardiovascular Health and Rehabilitation Association (ACRA) Core Components of Cardiovascular Disease, Secondary Prevention and Cardiac Rehabilitation 2014. Heart, Lung and Circulation. May 2015, 24 (5) p. 430 – 441.

Worcester, M. (1986) Cardiac Rehabilitation Programs in Australian Hospitals. National Heart Foundation of Australia.

Acknowledgements

Mr R for his long term affiliation with the Bowral CRP.
Mr W for consenting to share his journey.
James Young-Whitford – media and technical support.