Development of a Primary Care Model for Cardiac Rehabilitation and Secondary Prevention

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INTRODUCTION
Cardiovascular disease (CVD) remains the largest cause of premature death and death overall in Australia, despite the decline in CVD mortality rates in recent decades. Evidence shows that people with established heart disease are at an increased risk of suffering a subsequent vascular event. Nearly 60 per cent of coronary heart disease deaths and 35 per cent of non-fatal acute myocardial infarctions occur in people with a previous admission for CVD. These statistics illustrate the potential for cardiac rehabilitation – secondary prevention to reduce the impact of coronary heart disease.

Secondary prevention focusing on pharmacotherapy and risk factor modification has been shown to be effective in reducing mortality. Long-term aspirin treatment, blood pressure control, early intervention and long term treatment with beta blockers, and cholesterol-lowering treatment were found to reduce sudden myocardial infarction and coronary death. Exercise, cessation of smoking, dietary modifications, and weight loss in obese patients, have been shown to reduce the risks from coronary heart disease.

Cardiac rehabilitation describes all measures used to help patients return to an active and satisfying life, and to prevent the recurrence of cardiac events. The literature supports the effectiveness of multi-factorial cardiac rehabilitation programs, which include supervised exercise, interactive education, counselling and behavioural interventions. Cardiac rehabilitation, and efforts targeted at exercise, lipid management, hypertension control, and smoking cessation can reduce cardiovascular mortality, improve functional capacity, attenuate myocardial ischaemia, retard the progression of, and foster the reversal of atherosclerosis, and reduce the risks of further coronary events.

However, the uptake of cardiac rehabilitation programs is low. An Australian study reported uptake of a supervised group program was 11% in angioplasty patients, 31% post acute myocardial infarction, and 58% in people who had bypass surgery. American data suggests approximately 15% of patients access a rehabilitation program, partly due to geographical lack of available programs.

The reasons for poor uptake have been documented by Thornhill and Stevens and include:

- access, transport or driving time prohibitive;
- poor promotion of Phase 2 program while patient in hospital;
- resistance to group work;
- session times unsuitable if relying on a working person for transport; and
- session times may be inconvenient if the person has returned to work. This is particularly an issue for percutaneous transluminal coronary angioplasty (PTCA) patients.

Availability of the conventional supervised group program in rural and remote areas is not feasible for reasons such as:

- low patient numbers at any one time;
- distance to regional centres;
- lack of allied health and nursing staff in rural and remote areas; and
- high turnover of staff due to professional and geographical isolation.

Given the low uptake of conventional rehabilitation programs and the inaccessibility of programs in rural and remote areas, an alternative method of cardiac rehabilitation is required. The Northern Queensland Rural Division of General Practice and the Townsville Division of General Practice have developed a primary care cardiac rehabilitation program based on a model developed by the NSW Central West Division of General Practice. Under this model, the patient’s rehabilitation is supervised by their GP, delivered on a one to one basis, which incorporates a home-based walking/exercise program, with educational support delivered through written patient education modules. The remainder of this paper describes the structure, content, and preliminary outcomes for patients at 6 months. A paper more fully describing the development of the primary care model and implementation process is in preparation.

**METHOD**

This primary care model of cardiac rehabilitation commenced in North Queensland in September 1997. The program is being implemented in the rural and remote local government areas encompassed by the Northern Queensland Rural Division of General Practice ie. Bowen to Cardwell, west to Mt Isa and north west to the Gulf of Carpentaria; and the provincial centre within the Townsville Division of General Practice.

**Participants**

Patients were enrolled into the program by the Cardiac Rehabilitation Coordinator following medical or surgical treatment at Townsville General Hospital and the Mater Miscercordiae Hospital, Townsville. Patient consent to participate in the program, and allow contact for follow-up information was obtained at this initial hospital visit by the Cardiac Rehabilitation Coordinator.

**The Primary Care Model**

The key components of the primary care cardiac rehabilitation program include:

**Development:**

- information sessions for GPs outlining the benefits of cardiac rehabilitation, structure of the primary care program, and guidelines for management. These took place in both group sessions and by one to one academic detailing;
- GP prompt card outlining CVD risk factors and guidelines for management; and
- development and production of patient education resources addressing recovery issues, exercise, medication.
Operational:

- a brief intervention (45 minutes) with the patient by the Cardiac Rehabilitation Coordinator whilst the patient is in hospital. This intervention includes risk factor review and counselling, development of activity plan to be adopted after discharge, familiarisation with patient education materials, and exercise and food diaries, explanation of techniques for self-monitoring during exercise;
- risk factor profile and exercise prescription is dispatched to GP by the Cardiac Rehabilitation Coordinator prior to patient’s first GP visit within a week of discharge; and
- patient visits the GP regularly (weekly to fortnightly) during the first two months post discharge for monitoring of lifestyle changes, and then ongoing reviews determined by patient and doctor.

Data collection

Baseline data - In hospital

Patient demographic data and patient risk factors for CVD were obtained from the hospital records and by interview.

Follow-up data – 6 months

Follow-up data was obtained from both the patient and their GP. A pro forma was sent to the GP requesting data relating to lipid levels, weight/waist circumference, smoking status and activity level. Reminder phone calls were made to patients and GPs to improve return rates.

A questionnaire was sent to the patient to obtain self-report information relating to lifestyle changes, frequency of visits to their GP, and readmission to hospital. Questionnaires were returned in a pre-paid envelope.

There was some duplication in questions to GPs and patients to enable verification of data and to assist in obtaining a complete data set.

GP PERCEPTIONS OF THE PROGRAM

Interviews were conducted with a sample of GPs to determine what impact the cardiac rehabilitation program had on their management of cardiac patients. The criteria for selection of GPs for interview were that they had two or more patients enrolled in the program within this initial nine month period.

RESULTS

Follow-up data was obtained for 98 patients of a total of 122 (80%) enrolled in the first nine months of the program, from September 1997 to June 1998. The data for the 98 patients is presented.
Patient demographics

Seventy six percent of patients enrolled were male and 24% female. The age range of patients was 32 to 86 years with 60% of patients in the 55-74 years age group. Thirty six percent of people resided within the rural Division and 64% of patients resided within Townsville. Ninety-three patients (95%) were Caucasian, two were Aboriginal and three were Italian.

The majority of patients enrolled into the rehabilitation program had a coronary artery bypass graft (66%). Fifteen per cent of patients had PTCA, and four (4%) patients had a myocardial infarction. The remainder of patients (12) had either angina, angiogram, valve replacement or a pace maker fitted.

Uptake

Hospital separation data for 1997/98 and 1998/99 were not available at the time of writing. Hospital separations 1995/96 for Townsville General Hospital and the Mater Misercordiae indicated that the potential number of patients for cardiac rehabilitation residing within the boundaries of the Northern Queensland Rural and Townsville Division were 217 surgical and 461 medical patients. Using this data as a basis to estimate uptake, 55% [90/(217x9/12)] of surgical patients participated in the cardiac rehabilitation program. However only 8 medical patients were enrolled.

Risk factor modification

At 6 months follow-up post cardiac event, 54.2% of patients had reduced their weight, with the average weight loss being 4 kg.

At 6 months follow-up over 60% of patients were exercising to the recommended level of 3-5 times were week for a minimum of 30 minutes compared to 14% prior to the cardiac event.

Total cholesterol data was not available for all patients at baseline and six month follow-up. There were 24 patients where total cholesterol was recorded at both time points. At the time of the cardiac event, 16 of 24 patients (67%) had total cholesterol >4.5 mmol/l. At 6 months follow-up 11 patients (46%) had a total cholesterol > 4.5 mmol/l.

Twenty-eight patients (29%) were non-smokers, 60 (61%) had smoked and ceased prior to the cardiac event. Two previous smokers had commenced smoking at six months follow-up. Of five patients who were smoking at the time of the cardiac event, four had ceased smoking at six months follow-up and one continued to smoke. Information was not available for three patients.

Nine of the 98 patients (9%) were readmitted to hospital during the six month period.

Visits to GP’s

The primary care model hinges upon the patient having regular contact with their GP during the rehabilitation (discharge – two months post discharge) and post rehabilitation phase. Thirty nine GPs in the rural Division (78%) and 56 GPs in
the Townsville Division (42%) had patients who participated in the cardiac rehabilitation program between September 1997 and December 1998. Of the 98 patients reported in this study, 42% made 4-10 visits to their GP in the six month period, 17% visited 1-3 time, 15% had 11-15 visits and one patient had more than 15 visits.

**Impact on GP management of cardiac rehabilitation – secondary prevention**

Eight rural GPs and 8 Townsville GPs met the criteria of having had two or more patients enrolled in the program between September 1997 and June 1998, and were asked to be interviewed. Two rural GPs and three Townsville GPs were interviewed. The interviews were conducted in June 1998. The purpose of the interviews were to determine aspects of the program that supported the GP in the management of cardiac rehabilitation, aspects that supported the patient to make sustainable lifestyle changes, and where improvements to the program could be made.

The main points arising from the interviews indicated that the program provided the GP with a structure to manage their patient’s cardiac rehabilitation. The reminder card acted as a prompt to the GP to address risk factors and assisted in making their consultations more efficient. GPs also indicated that the program motivated and reinforced the patient in making lifestyle changes. They reported the education modules to be informative and comprehensive and patients were “clued-up” when they visited the GP, particularly as a result of prior contact with the cardiac rehabilitation coordinator. The exercise diaries were used by the patients, if they were well promoted and linked to patient goals. The opportunity to discuss problems as they arose, during recovery, was also a positive outcome. Several of the doctors indicated that education modules required a more detailed section on the psychological impact of a cardiac event and issues for recovery.

**DISCUSSION**

These preliminary data are encouraging in that they suggest that patients participating in a cardiac rehabilitation program supervised by their GP, make lifestyle changes that may reduce the risk of subsequent cardiac events. At 6 months after the cardiac event over half the participants in the cardiac rehabilitation program had sustained a weight loss, and 60 per cent were exercising to levels recommended by the Australian National Heart Foundation. The percentage of patients with cholesterol levels greater than 4.5mmol/l (NHMRC guidelines for patients with a history of cardiovascular disease) had decreased over the 6 months period.

The high number of patients who had ceased smoking prior to the cardiac event reflects the fact that two thirds of the patients had a coronary artery bypass graft and probably were required to stop smoking prior to surgery.
Thirty six percent of the patients participating in the program were from rural and remote areas within the Northern Queensland Rural Division of general practice. This program has made cardiac rehabilitation accessible to people in rural areas, by utilising and supporting the general practitioners to manage their patient’s rehabilitation.

While these results are encouraging, there are a number of limitations that must be acknowledged in both the observational study design and execution of the program.

With respect to the program execution, it is obvious that systems are not in place to identify and enroll medical patients into the rehabilitation program. The Division is currently focusing on developing methods to identify medical patients at Townsville General Hospital and the District Hospitals within the Divisions’ boundaries. The extrapolated uptake of 55 per cent by surgical patients of the primary care rehabilitation program, is comparable to that reported by Bunker and Worcester11 for a facility-based program. The commencement of a facility based Phase 2 program at Townsville General Hospital in March 1998 offered a choice of programs to patients residing in Townsville, which reduced enrollments from Townsville patients.

The small number of Aboriginal patients enrolled into the program is concerning given that 10 per cent of the population (11,000) of the Northern Queensland Rural Division and 4.5 per cent of the Townsville Division (6,000) are Aboriginal and Torres Strait Islander. Strategies to adapt the primary care model to better meet the needs of indigenous people are currently being developed by the rural Division.

The focus of the primary care cardiac rehabilitation program is on the provision of a service to both the patient and their GP. Interviews with GPs indicates that the components of the rehabilitation program have provided them with a framework for the management of a patient’s rehabilitation, as well as providing educational support to the patient. These comments are in agreement with a focus group conducted with GPs participating in the program conducted by the NSW Central West Division – upon which the North Queensland program is based. These doctors also indicated that regular contact with the patient for the first 3-4 weeks post discharge supported the patient during a period of adjustment, and offered the opportunity to target specific risk factors at each patient visit. Therefore, the GP was not trying to address all risk factors at once and the patient could absorb the information over a series of visits. They felt the program could be improved by better feedback to both GPs and patients regarding patient outcome, for example the establishment of a patient newsletter, and by establishing systems to link patients with support groups.

Resource limitations have precluded the establishment of a usual care control group, thus making it difficult to conclude whether the reported changes in patient lifestyles are a direct result of the primary care program, and not a result
of the cardiac event itself as an impetus for change. Longer term follow-up is required to determine the sustainability of patients’ lifestyle changes, and outcomes in terms of further cardiac events.

Strategies to collect follow-up data from both GPs and patients are continuing to be revised in an effort to improve response rates and the obtainment of complete data sets. This is a challenge facing many Divisions in the evaluation of primary health programs. Patient self-report, use of pathology providers for data provision, and simple methods for general practitioners to complete and return proformas need to be targeted.

The primary care cardiac rehabilitation program will continue to be refined to increase the enrollment of medical and indigenous patients, and improve data collection strategies for effective evaluation of this model.

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