CHAPTER 10

MULTIDISCIPLINARY CARE IN HOSPITAL OUTPATIENTS

RANDOMISED CONTROLLED TRIAL

10.1 Introduction

Outpatient services make up a considerable proportion of the work load of hospital-based allied health practitioners as revealed through development of the MAP system. The Macarthur Health Service (MHS) at Campbelltown Hospital provided 34,834 occasions of service (OOS) for 5873 patients through its Ambulatory Care Continuum & Allied Health Services between June 2000 and May 2001. Outpatient services accounted for 65.2% of the OOS, and 67.2% of referrals. The disciplines providing these services were allied health professionals and ambulatory care nurses. The terminology currently used defines services delivered in a patient's home as "community care" and non-admitted services in a hospital setting as "outpatients".

Some outpatient therapy referrals are made following hospital discharge, and the rest are from outside referral sources such as GPs and specialists. However, patients with chronic and complex health care needs who are admitted to hospital are often, following discharge, not the recipients of well-coordinated community care and do not access these services [140]. It is proposed that multidisciplinary care provided within a hospital outpatients therapy department, and driven by hospital health care providers, will enhance the care received by these patients, improving their quality of life, and maintaining their wellness within the community.

The idea for the simple intervention of a multidisciplinary team meeting and management plan came from the triage system which the author has personally experienced and which is commonly used by aged-care assessment teams (ACAT) [141]. An ACAT such as the one based on the lower North Shore of Sydney may have up to 10 referrals per day and twenty on a Monday. The team

meets for 30 minutes to identify, from the referral information for each patient, who is the most appropriate allied health nursing or medical professional for first contact. The documented plan in the patient's notes may designate one or more providers, and may suggest referral to other agencies. This coordinated approach is not applied in discipline-specific outpatient therapy services, e.g. physiotherapy, occupational therapy, speech pathology and social work.

The study described in this chapter was designed to determine if there would be an increase in multidisciplinary care associated with the conduct of a multidisciplinary case conference which produced a management plan. This intervention was applied to patients referred to the outpatients allied health service for the disciplines of physiotherapy and occupational therapy in the Campbelltown Hospital. A Consort Statement for this trial appears in Appendix 4.

10.2 Methods

Recruitment

Adult patients presenting to the outpatients department at Campbelltown Hospital referred for physiotherapy or occupational therapy requiring more than one treatment were eligible for multidisciplinary case conferencing. Initial therapy assessment of the patient was completed to determine suitability for a course of treatment involving at least one more attendance than the assessment visit.

Process of recruitment:

1. Patients referred to outpatient physiotherapy or occupational therapy were identified for study.
2. Assessment by therapist to satisfy eligibility criteria.
3. Collection of consent from patient to participate in the study.
4. Random allocation of patients to control and intervention groups.

Approval to conduct this study was granted by the Human Research and Ethics Committee of the South Western Area Health Service.

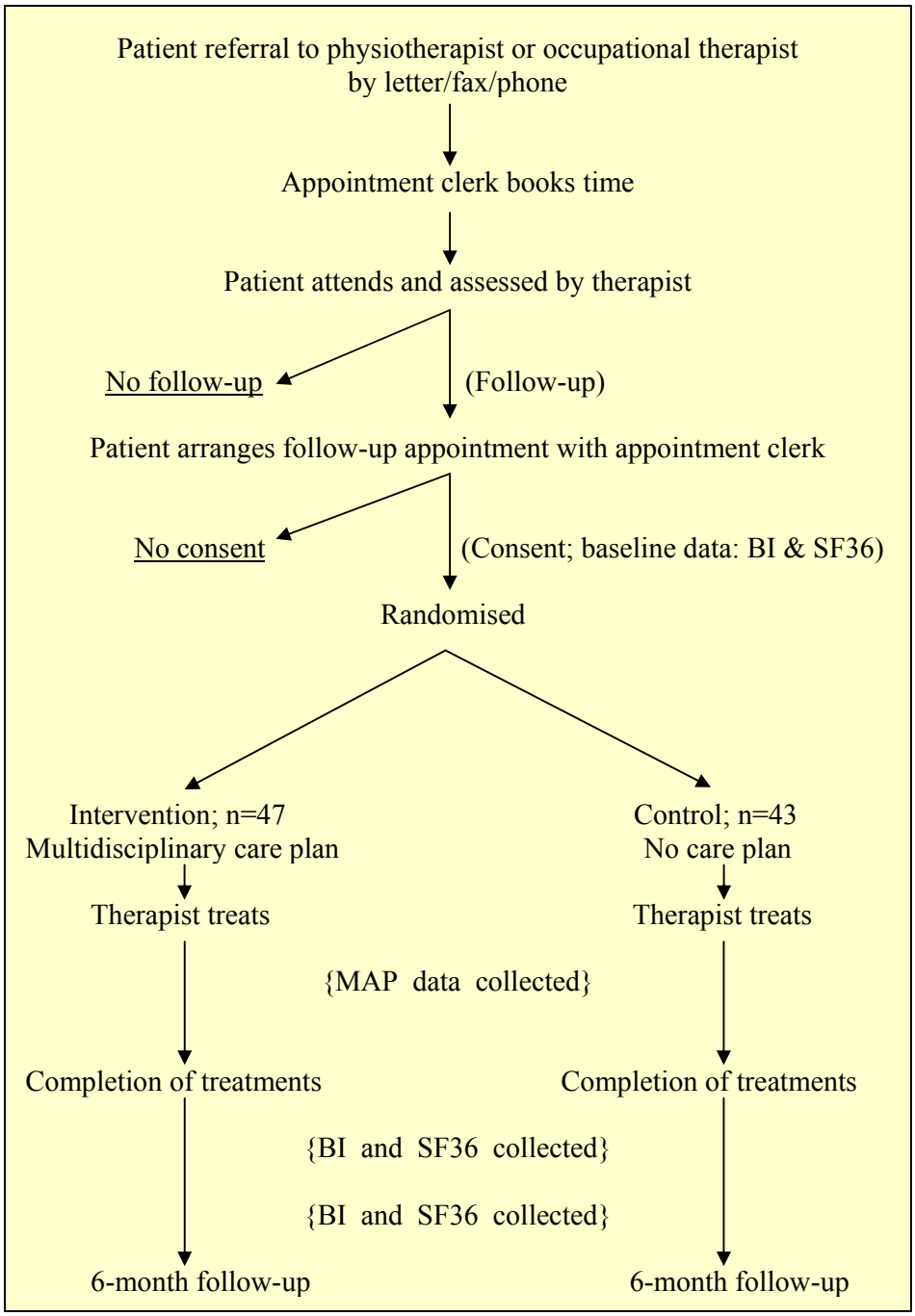
Intervention group

These patients' files were subjected to a multidisciplinary case conference following their assessment by the therapist of first contact. The case conference was conducted before the patient's next attendance. The case conference identified treatments thought likely to be most beneficial to their current condition, in addition to those items already addressed by the therapist of first contact. This intervention package was intended to result in a recorded plan in the outpatients section of the hospital file, written by any team member at the multidisciplinary team meeting. The recording member may have been any member of the team and was delegated on a rotating basis. In some instances, suggestions were made by the team for referral to another allied health professional within the health service or an outside provider.

Control group

These patients received care in the "normal" manner. The allied health professional of first contact treated the patient as they would normally, referring onwards to another professional if they felt it was required (Figure 10.1).

Figure 10.1 **Flow diagram of multidisciplinary outpatient RCT**



Data collection

The allied health information data system (MAP database), which was developed prior to this study, was used as the data collection tool. It was used to collect activity data on interventions or types of treatment, number of treatment sessions, and time units. Session time units included the time allocated to a range of activities which were linked to the patient and may have included phone calls, making referrals, or writing reports. Direct time units referred to "face to face" treatment time. One time unit equals five minutes.

Functional (Barthel Index [BI]) and Quality of life measures (SF 36) were collected by a study nurse before the commencement and following the completion of the episode or "quanta of care". This nurse had experience with all measurement tools and no clinical responsibilities for patient care. Subsequent file reviews, for quantitative and qualitative data, reviewing outcomes of the recorded plan, were conducted by the same project nurse. The nature of this study did not allow blind assessment, as any file review would reveal the input of the multidisciplinary team through the recorded file entry.

The MAP data system was interrogated by the study nurse for activity data for each patient and cross checked with the file review. Where two values were different, then the higher figure for activity was recorded for the purpose of this study. Occupational therapists and physiotherapists were treated as one single group of therapists for the purpose of this study. However, referral from a physiotherapist to an occupational therapist or vice versa would be considered as a "referral to another therapist".

Data analysis

Differences of numbers of treatment interventions, periods of treatment time and numbers between groups, were analysed. An independent samples t-test was used to evaluate pre- and post-quality of life scores to determine if there were statistically significant differences between the control and intervention groups. Differences in proportions were analysed with a chi-squared test. All data were analysed by intention to treat.

10.3 Results

Baseline data

A sample of 90 patients was recruited. This group consisted of 15 patients from occupational therapy referrals and 75 patients from physiotherapy referrals. The intervention group consisted of 47 patients allocated to multidisciplinary case conferencing and development of a care plan. The remainder (control) group of 43 patients were assessed in the normal manner by a single therapist. Baseline characteristics of the two groups are shown in Table 10.1. The mean age of patients in the intervention group was 53.4 (SD18.7) which was somewhat older than the control group with a mean age of 47.6 (SD17.8). The numbers of males and females in each group was similar.

Table 10.1 Baseline characteristics of control and intervention groups; n=90

Item	Intervention; n=47	Control; n=43
Age	53.4 (SD 18.7)	47.6 (SD 17.8)
Male (age)	13 (46.7 SD 17.1)	17 (45.2 SD 20.2)
Female (age)	34 (55.9 SD 18.8)	26 (49.2 SD16.2)
First contact Physio	42 (89%)	33 (77%)
First contact OT	5 (11%)	10 (23%)
Service group		
Musculoskeletal	33 (70%)	31 (72%)
Orthopaedic	8 (17%)	2 (5%)
Hands	5 (11%)	8 (18%)
Other	1 (2%)	2 (5%)
SF 36 Health Status	**n=23**	**n=22**
Physical Comp. Score	34.5(SD 9.8)	37.8 (SD 8.3)
Mental Comp. Score	39.5 (SD 13.7)	44.5 (SD 10.5)
Barthel Index	**n=43** 92.4 (SD 10.1)*	**n=40** 98.0 (SD 3.7)*

*Significant difference in Barthel Index means. (Diff. 5.6, p=0.002, 95% CI 2.2 to 8.9).

There were greater numbers of patients seen by physiotherapists than occupational therapists, as the therapist of first contact, in both intervention and control. The service category most frequently chosen by both groups was "musculoskeletal", with small numbers in the other three categories of orthopaedic, hands, and other. Service categories were similar in both groups. Patients' diagnosis is not a mandatory data entry item, and thus rarely entered by allied health professionals.

The sample completing the SF36 was small (23 intervention, 22 control), and showed no significant differences, although lower scores for both Physical and Mental Components were recorded in the Intervention group compared to the Control group. The follow up SF36 compliance was even poorer, and thus no further analysis of SF36 is presented.

The functional scores using the Barthel ADL Index were completed for 40 subjects in the control group (n=47) and 43 in the intervention group (n=43). The mean Barthel score in the intervention group was 92.4 (SD 10.1) which was 5.6 points significantly lower than the control group with a mean score of 98.0 (SD 3.7).

Quality of the service

The number of different issues recorded in the management plan produced by the multidisciplinary team was 2.8 (SD 1.1) per patient episode, which was a significant difference of 1.7 issues more than the control group mean of 1.1 (SD 0.6) points ($p<0.001$, 95% CI 1.4 to 2.1). The intervention plan was followed in 20 of the 47 intervention group (43%). There were 12% more records in the intervention than the control group referred to another therapist or provider, which was not significant. The therapist-recorded "goals achieved" was 47% in the intervention group which was not significantly higher than the control group of 44%. These results are summarised in Table 10.2.

Table 10.2 **Quality of the service; n=90**

Item	Intervention; n=47	Control; n=43	Difference	95% CI	P value
Mean number of issues in plan/patient	2.8 (SD1.1)	1.1 (SD0.6)	1.7	1.4 to 2.1	<0.001
Plan followed	20 (43%)	Not applicable		28% to 57%	Not applicable
Referral to other provider	10 (21%)	4 (9%)	12%	-3% to 27%	0.117
Goals achieved	22 (47%)	19 (44%)	3%	-18% to 24%	0.803

Resource Indicators

The treatment period was defined as the number of days from first therapy contact to the date of final contact with the same or any of the therapists registered on the MAP system. Thus a patient who commenced with a physiotherapist and who completed care with another physiotherapist or any other therapist would have had the period from commencement to completion counted as the treatment period. The mean treatment period for the Intervention group was 68.7 (SD 4.0) days, which was not significantly different from the treatment period of the Control group of 64.9 (SD 51.0). Likewise the occasions of service (Intervention mean 7.6, Control mean 7.7), session time units (Intervention mean 60.5, Control mean 62.8) and direct care time units (Intervention mean 53.2, Control mean 56.6) were not significantly different between the two groups (Table 10.3).

Table 10.3 Mean time, OOS and treatment period per patient; n=90

Item	Intervention; n=47	Control; n=43	Difference	95% CI	P value
Treatment Period (days)	68.7 (4.0)	64.9 (51.0)	3.8	-18.3 to 2.57	0.733
Occasions of Service	7.6 (6.7)	7.7 (5.5)	- 0.1	- 2.6 to 2.5	0.966
Session Time Units*	60.5 (54.0)	62.8 (49.0)	2.3	-19.3 to 24.0	0.830
Direct Care Time Units	53.2 (49.9)	56.6 (45.8)	-3.4	-23.5 to 16.3	0.738

*One Time Unit is equal to 5 minutes.

Functional Gains

The Barthel ADL Index results were incomplete at baseline (Intervention 43, Control 40), with fewer assessments recorded at 6-month follow-up (Intervention 36, Control 32). There were 34 intervention pairs and 32 control pairs available for analysis of change in their Barthel Index. The mean change in Barthel Index in the intervention group was an improvement of 2.9 points (SD 11.2) and an apparent deterioration of function with a mean change of –1.4 points (SD 7.4) in the control group which was a non-significant difference of 4.3 points (Table 10.4).

Table 10.4 Functional gains of case conference vs normal care group

Item	Intervention; n=47	Control; n=43	Difference	95% CI	P value
Baseline	n^b=43	n^b=40			
Barthel Index	92.4 (SD 10.1)	98.0 (SD 3.7)	5.6	2.2 to 8.9	0.002
Follow up	n^f=36	n^f=32			
Barthel Index	94.4 (9.2)	96.6 (6.0)	-2.1	-5.9 to 1.7	0.273
Paired	n^p=34	n^p=32			
Change in Barthel Index	2.9 (11.2)	-1.4 (7.4)	4.3	-0.4 to 9.1	0.070

10.4 Discussion and conclusions

The intervention of a multidisciplinary team conference and management plan was a relatively simple intervention which was delivered within existing staffing levels and resources. The outcome of this study did not demonstrate a dramatic impact on either group for workforce-related resources. The treating therapists' input for occasions of service, direct and indirect time allocated to their patients was not significantly different for either group.

It is not surprising that more issues per patient were identified by the multidisciplinary team in the intervention group than by the single therapist in the control group. The recording in a management plan of a significantly greater number of issues per patient was associated with a corresponding, though insignificant, greater proportion of referrals to other providers. There were no other indicators of differences for patient outcomes.

The two groups did not show any significant changes in the Barthel Index (activity of daily living score) which unfortunately suffered from the "ceiling affect" of the scale. It was an unexpected finding that so many adults of a younger age group with normal or nearly normal scores would attend for treatment. The Barthel Index is not a useful test for detecting clinically significant problems in musculoskeletal conditions such as back pain. However, the therapist-recorded "goals achieved" were not significantly different for the two groups. The proportion of only 47% goals achieved in the intervention group raises questions regarding suboptimal management.

A systematic review of outpatient lower back pain studies suggested patients may need up to 100 hours of therapy to get good outcomes. The review supported multidisciplinary care as optimal management [142]. In response to this review, an audit of 176 MHS patients with back pain was performed in 2000 showing even lower rates (35%) of goals achieved [143]. There was a number of reasons suggested from this audit for suboptimal care, which may also apply to this study. These included the lack of therapy services such as behaviour therapy and hydrotherapy when developing the multidisciplinary case management model. Another reason was the possible "dose effect" of therapy, where patients do not have the opportunity of completing treatment due to waiting lists and other pressures. The MAP pilot data demonstrated an adequate range of therapy services for outpatients. Therapists decide the period of treatment and discharge for their patients. In view of these circumstances, it appears the lack of multidisciplinary care is the most likely contributor to sub-optimal treatment.

There may be an explanation for the large numbers of seemingly functionally well patients attending for musculoskeletal complaints. The Campbelltown area serviced by the outpatient service has a low socioeconomic profile. There is a corresponding low proportion of people with private health insurance in the region (8%). It is likely that the only access to therapy for this community may be the hospital's outpatient department. This type of patient would normally be treated by private practices in more affluent communities.

This study has provided evidence that the intervention had little influence on the outcome for patient care. The failure of the intervention to impact on work practices suggests that the passive application of the plan had little effect on the treating therapist. Several other approaches may have been tried such as enforcing implementation of instructions or orders in the plan by the therapist. This approach has had varied success with the introduction of care plans and pathways in hospital practice [144]. Any future study design should explore more active involvement of the treating therapist and possibly the patient in discussion of patient issues and developing of a management plan.

This study recruited a relatively young group of adults with high scores in basic personal activities of daily life functioning who had an average of five hours treatment and demonstrated only a 47% recovery. The range of services offered by the acute hospital in this study has been under extreme scrutiny with a focus on acute care [145]. This study raises questions about the efficiency and efficacy of hospital-based outpatient departments treating conditions of low acuity. The hospital may not be the best place for outpatient departments, and these services may be better situated within the communities they serve.

There may be lessons to learn from the re-configuration of community health care for older people in Japan called the "Gold Plan" [146]. The development of nursing "stations" [147] as a centre for treatment and outreach home care shares similarities with the Australian Community Health Nursing Centres. These centres could be a more appropriate setting than hospitals for outpatient services. There is also a trend away from single-handed towards larger group general practices, often built in association with pharmacies and diagnostic services. The combining of these services may provide the opportunity for a more patient-focussed "one-stop shop" or primary health care centre approach, where allied health professionals, nurses and GPs could provide a greater contribution to health through multidisciplinary care.