

**LINKED CARE EVALUATION
HORNSBY KU-RING-GAI
COORDINATED CARE TRIAL**

LOCAL EVALUATION
SERVICE PROVIDER REPORT

SPRC Report 2/00

University of New South Wales Consortium
Social Policy Research Centre
Centre for General Practice Integration Studies
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The views expressed in this publication do not represent any official position on the part of the Social Policy Research Centre. This report was produced to make available the research findings of the individual authors, and to promote the development of ideas and discussions about major areas of concern in the field of social policy.

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Abbreviations and Glossary

ACAT	Aged Care Assessment Team, part of RACS
ADD	Ageing & Disability Department, NSW
AN-DRG	Australian National Diagnosis Related Group
ATC	Anatomical Therapeutic Chemical Classification
CACP	Community Aged Care Package
CEO	Chief Executive Officer
CC	Care coordinator
CCDM	Coordinated Care Data Management group
CCT	Coordinated Care Trial
CDHAC	Commonwealth Department of Health and Aged Care
CDHSH	Commonwealth Department of Human Services and Health (now Health and Aged Care)
CIARR	Client Information Assessment and Referral Record
Clients and participants	Linked Care referred to clients and consumers as ‘participants’ in order to differentiate between their role in Linked Care and their role as clients or users of community services. Generally this report retains that convention unless it is referring to the general client population, clients outside the trial or in tables. All names used in the report are pseudonyms.
CM	Case Management
COAG	Council of Australian Governments
COPS	Community Options Program
Division of General Practice	Hornsby Ku-ring-gai Division of General Practice (incorporating Ryde)
DOCS	Department of Community Services, NSW
DRG	Diagnosis Related Group
DVA	Department of Veterans’ Affairs
Effective sample	Participants who responded to both the baseline and end trial participant questionnaires
GP	General Practitioner
HACC	Home and Community Care program
HCF	Hospital Contributions Fund
HCS	Home Care Service
HIC	Health Insurance Commission
HKCC	Hornsby Ku-ring-gai Coordinated Care
HKHCHS	Hornsby Ku-ring-gai Hospital and Community Health Services
IHD	Ischaemic Heart Disease

ILU	Independent Living Unit
IT	Information Technology
MBF	Medical Benefits Fund
MBS	Medical Benefits Scheme
MFC	Mercy Family Centre
MOW	Meals on Wheels, Hornsby Ku-ring-gai Hospital
NESB	Non-English-Speaking Background
NIDDM	Non-Insulin Dependent Diabetes Myelitis
NOS	Not Otherwise Specified
NSAHS	Northern Sydney Area Health Service
NSHNS	Northern Sydney Home Nursing Service
NUM	Nursing Unit Manager
PBS	Pharmaceutical Benefits Scheme
PHI	Private Health Insurance
PMMS	Patient Medical Management System
PSG	Peer Support Group (care coordinator meetings)
QCWP	Quality and Complaints Working Party
RACS	Rehabilitation and Aged Care Service, Hornsby Ku-ring-gai Hospital
SAH	Sydney Adventist Hospital
SF-36	Health and Well-being Questionnaire (Short Form 36)
SNAP	Sub-Acute and Non-Acute Patient Classification
TCM	The Care Manager
TUS	Trial Utilisation System
UNSW	University of New South Wales

Part A Introduction

1. Introduction and Background

The Linked Care Trial was an innovative approach to linking health and community care services for people in need of ongoing care, established in 1996-97 in the municipalities of Hornsby and Ku-ring-gai in Sydney's northern suburbs. The trial formed part of a national program of Coordinated Care Trials established in 1996 to test whether it is possible to coordinate the care currently provided by a variety of different health and community care services and practitioners using funds pooled from a number of different Commonwealth and State programs. This flexible use of funding was to be managed by care coordinators (CCs) assigned to each participant, using an individual care plan to help organise the medical care and social assistance that each would receive. The Evaluation of the Linked Care Trial was to test whether this approach could be practically implemented in the local community and, if so, to determine whether this led to a more effective use of existing resources with improved outcomes for participants and caregivers.

This service provider experience thematic report reviews progress with Linked Care and the evaluation from commencement of the Live Phase of the trial in 1997 to its formal conclusion in December 1999. Drawing on quantitative and qualitative data collected as part of the Local Evaluation, the report presents an analysis of findings with respect to a number of separate components of Linked Care. It also identifies the conditions which underlie the achievements of Linked Care in this period and considers obstacles that have constrained the achievement of trial goals or which could have affected the evaluation.

Service providers were integral to Linked Care as partners in Linked Care management, contributors to the fund pool, subcontractors of care coordination services and the providers of health and community care to the participants.

The remainder of this introduction provides a brief overview of the background to the Coordinated Care Trials (CCTs) and specifically this trial, Linked Care. This introduction also serves as a guide to the remainder of the report.

1.1 Background to the CCTs and the Evaluation

The proposal for the establishment of what became known as 'Coordinated Care' can be traced to the reform proposals advanced by the Council of Australian Governments (COAG) in 1995. A report published by the Council in April of that year (COAG, 1995) identified 60 different programs for health and community services in Australia, some operated by State governments, others by the Commonwealth or by both levels of government. This complex system of organisation and funding, which also involves funding from private health insurance funds and individuals and their families, was seen as providing a number of perverse financial and organisational incentives that promoted the duplication of basic tasks such as assessment and referral, often skewing service use towards more intensive and expensive interventions than may be required.

The system of health and social care was seen to be in a state of near crisis and in need of drastic overhaul. It was argued that the complexity of provision, and the problems and

inefficiencies in the provision of health and community services arose from the rigidity of program boundaries, from the duplication and overlapping responsibilities of State and Commonwealth programs, and from the absence of competition between service providers. For example, it was simple for general practitioners (GPs) to prescribe medications for their chronically ill patients, but relatively difficult to obtain assistance with physiotherapy or housekeeping. It was possible to refer on to community services, but there was no guarantee that their referral would be accepted, as the fixed budgets under which most services operated meant they were unable to assist all applicants and may have had to prioritise applicants. Introducing innovative approaches to service provision to fill gaps in the local system was also difficult, as there was little flexibility in the way existing funds could be deployed at the local level.

To overcome problems such as these, a reform agenda was proposed which would draw the existing 60 programs together into one of three streams of care:

- ? a *General Care* stream, for those who required occasional primary care;
- ? an *Acute Care* stream, providing specialised acute and follow-up care services for those with acute care needs; and
- ? a *Coordinated Care* stream, to meet the needs of those with disabilities or chronic illnesses with complex care needs, requiring continuing care (COAG, 1995a).

In response to the reaction to the report, it was subsequently proposed that a series of large scale trials be undertaken to test the efficacy of the proposed models, before such a large scale system change was introduced. These trials were, initially, to be focused on the coordinated care stream.

Expressions of interest in conducting trials were called for in September 1995 by the (then) Commonwealth Department of Human Services and Health (CDHSH, 1995). Of the approximately 50 submissions received, twelve were selected and funded for the Tracking Phase, which provided the proposed trials with an opportunity to develop and refine their initial proposals and to firm up links between the participating services and agencies. From the twelve, nine trials were given Commonwealth approval and funding to proceed in 1996. Along with the Care Net Trial established in the Illawarra region, Linked Care, sponsored by the Northern Sydney Area Health Service (NSAHS) was one of two trials to proceed in New South Wales (CDHAC, 1999).

Commonwealth priorities determined many of the operational characteristics of the nine successful trials and their evaluation. All trials were required to be large scale, with an initial minimum size of at least one thousand clients receiving the intervention. Trials were also required to nominate a control group of at least five hundred clients receiving 'standard' or normal services, for comparison purposes. Other features, such as the commencement of the Live Phase of the trials in October 1997, the final date of the recruitment phase of the trials in April 1998, and the completion of the Live Phase on December 31, 1999 were also established by the Commonwealth. A summary of the timeline for the CCTs is presented in Table 1.1.

Many of the detailed requirements of the evaluation were determined in a similar way. Specifications for the evaluations of the trials were first developed by the evaluation team from Coopers and Lybrand Consultants and the Centre for Health Program Evaluation, as

trials were developing and refining their designs. Detailed requirements for the evaluation, at both national and local levels, were agreed upon, and published, first in a series of draft documents, then in a final *Evaluation Framework* (Coopers and Lybrand, 1997). As well as outlining the structure of local evaluations alongside a national evaluation, the framework provided a comprehensive inventory of the data required from different sources, and set out the evaluation hypotheses, discussed in the following section of this report.

Table 1.1: Milestones in the National Timeline for the Coordinated Care Trials

? September 1995	Initial call for Expressions of Interest
? August 1996	First design contract signed
? June 1997	First Live Phase contract signed
? April 1998	Recruitment completed
? March 1999	Completion of Interim Evaluation Reports by Local Evaluators
? August 1999	Release of National Interim Evaluation Report by National Evaluators
? December 1999	Completion of Live Phase of Trials
? March 2000	Final Data from Trials and Completion of Local Evaluation Reports
? July 2000	Final report of National Evaluation

Responsibility for the local evaluation of the Linked Care Trial was awarded to the University of New South Wales Evaluation Consortium (UNSW Evaluation Consortium) in December 1996, following a competitive tendering process. In 1997 responsibility for the national evaluation was contracted to a consortium between the Centre for Health Advancement at Flinders University of South Australia¹ and KPMG Management Consulting. The design, development and management of quantitative data systems for the national evaluation was assigned to La Trobe University's Coordinated Care Data Management (CCDM) group.

1.2 Background to Linked Care

The Linked Care Trial was proposed in 1995 by the NSAHS in response to a national call for expressions of interest in September of that year. The NSAHS committed associated facilities and services through a joint expression of interest with the Hornsby Ku-ring-gai Division of General Practice (incorporating Ryde) and a number of independent non-profit health and community services, most of which were funded through the Home and Community Care Program (HACC). Preparations continued throughout 1996 and 1997, and Linked Care formally commenced operation on October 1 of that year. It operated until December 1999, with a final Evaluation Report due by the end of March 2000.

¹ This responsibility passed to Monash University in early 1999, due to the transfer of the Centre's director.

Briefly, the model of care coordination proposed for Linked Care was that a CC was appointed to each participant, either their GP or an employee from an agency that provided or could provide them with other health and community care. The CC in consultation with the participant and relevant service providers was to prepare or review a care plan for the participant at least every three months, which covers their need for and use of both medical and other health and community care services. Care provided to the client was to be paid from a fund pool of health and community care funds, as were care coordination costs. This was intended to provide a budget that was flexible in its application and yet constrained in its total amount, thereby enabling the CC to seek the most cost effective solutions to the client's care needs. Services used were to be reconciled against the care plan as feedback to the CC. CCs were to be accountable to each other for significant financial decisions through a Peer Support Group (PSG) structure.

In relation to the whole of system response, a baseline description of the provision of health and community services in the Hornsby Ku-ring-gai area were provided in two reports: *Service Provider Baseline Report – Service Delivery Description* (1999) and *Service Providers Baseline Report - Managers' Expectations of the Linked Care Trial* (1999). The reports presented the results of the 1997 baseline questionnaire of service providers taking part in Linked Care.

1.3 Overview of the report

This report is structured in three parts. Part A is an introduction to the report including the background to the trials (Chapter 1) and an explanation of the evaluation methodology (Chapter 2).

Part B presents the findings of the evaluation. Chapter 3 focuses on service delivery issues, including a profile of the service providers, an examination of the service delivery processes and a discussion about the extent of service integration and coordination in the Hornsby Ku-ring-gai area. Chapter 4 details issues concerned with the service providers experience of the organisation and management of Linked Care, including financial management, care coordination, service substitution, medical intervention and other operational issues. Chapter 5 presents the service providers views of the impact of Linked Care on the participants, including clients in and outside Linked Care and the impact on carers. Following this, service usage patterns are discussed. The findings are drawn together in Part C, in terms of analysing how the Linked Care model performed.

The report should be read in conjunction with the *Local Evaluation Final Report* and the other two thematic reports:

- ? *Client Experience Report*
- ? *Whole of System Response Report.*

2. Methodology and Approach to the Local Evaluation

2.1 Background to the Evaluation

The local evaluation of the Linked Care Trial was undertaken as part of the larger, national evaluation of Coordinated Care, the essential form of which was set out in nationally produced documentation (Coopers and Lybrand, 1997; CDHSH, 1996). It was also conducted as a paid consultancy in accordance with the specifications laid out in the tender brief with which the NSAHS commissioned and funded the research (NSAHS, 1997). The commissioning process thus set out the basic parameters of the research, determining too the strict limits on the resources available to evaluation team to undertake the study.

Undertaking a rigorous and thorough evaluation of an intervention as complex as Linked Care, particularly given the limited resources available for the local evaluation, required careful conceptualisation, planning and prioritisation of the research tasks at hand. This chapter provides an overview of the main elements of the research design developed and the methodologies employed by the evaluation team.

National and Local Hypotheses

The *National Evaluation* and the *Local Evaluation Tender Requirements*, stated that the evaluation was to test the primary hypothesis:

1. that coordination of care for people with multiple service needs, where care is accessed through individual care plans and funds are pooled from within existing programs, will result in improved individual client health and well-being within existing resources (HKCC Project, 1997a; CDHFS, 1996a).

It was also to test the hypotheses that the success of coordinated care would be affected by:

2. the extent of substitution between services;
3. the range of services and the size of the trial pool;
4. the characteristics of the clients;
5. the quality of the clinical and service delivery protocols;
6. the characteristics of the care coordination function;
7. the particular types of administrative arrangements;
8. the extent to which clients were partners in the planning and coordination process; and
9. that the primary results can be achieved without detriment to other key areas of government policy, particularly equity of access and privacy.

The evaluation also had to address *the extent of collaboration in care between those involved*, and *the quality of care* and a number of related secondary hypotheses as set out in the national project documentation.

The local evaluation was also to determine the extent to which the trial was able to meet six primary objectives concerned with establishing the trial and five secondary objectives concerned with changing existing patterns of service usage. Two of the objectives

emphasised issues which were not identified in the national evaluation, namely the *impact of coordinated care on informal caregivers*, and the introduction of *integrated, multidisciplinary assessment services* for frail aged people, people with severe disabilities and people with chronic medical problems in the trial area.

The national and local hypotheses are listed in full in Appendix 1. The evaluation conceptual framework is described in Appendix 2.

2.2 Evaluation Methods

Service providers surveyed for the evaluation, listed in Table 2.1, included those with an active role in Linked Care, based on fund pool contribution, care coordination subcontracting and representation on the management committees of the trial. A sample of smaller providers likely to be affected by Linked Care was also included.

Table 2.1: Service Providers and Funders in Linked Care

	Surveyed for the baseline reports	Fund pool contributor	Care coordination subcontractor	Management/working party representation
NSAHS^(a) (sponsor)	yes	yes	no	yes
HKHCHS^(b) Inpatient, outpatient, emergency services, ACAT, RACS, Dementia Services	yes	yes	yes	yes
General Practitioners	yes	(HIC)	yes	yes
Northern Sydney Home Nursing Service	yes	yes	yes	yes
Home Care Service	yes	yes	yes	yes
Mercy Family Centre	yes	yes	yes	yes
Other HACC services Hornsby Meals on Wheels Ku-ring-gai Neighbour Aid	yes	no	no	yes
HCF and MBF	no	yes	no	yes
Pharmacists	no	(HIC)	no	yes
HIC (MBS and PBS)	no	yes	no	no
Department of Veterans' Affairs	no	yes	no	no

Notes: (a)Northern Sydney Area Health Service

(b)Hornsby Ku-ring-gai Hospital and Community Health Services

Data on each of the key topic areas discussed in the evaluation conceptual framework was collected as part of the evaluation, using quantitative data where available, and qualitative

data and observations where appropriate. A summary of the data sets is listed in Appendix 3.

Six methods were employed to investigate the baseline position of service providers and CCs:

- ? semi-structured interviews with the service provider managers listed in Table 2.1;
- ? a written questionnaire to all GPs practising in the Hornsby Ku-ring-gai area (343) according to a list provided by the Division of General Practice, conducted between December 1997 to March 1998. A second mail out occurred in January 1998 and a telephone follow up in March 1998;
- ? a baseline data questionnaire to service providers listed in Table 2.1 on client, financial and staff profiles;
- ? a baseline questionnaire to a sample of service provider staff and volunteers of the service providers listed in Table 2.1 (all staff and volunteers with a coordination or case management role, including CCs, and 10% of all other staff and volunteers);
- ? the collection of written data about other major service providers in the area (annual reports, brochures, other administrative data); and
- ? eight baseline telephone interviews with CCs in May 1998 using a semi-structured interview schedule. The CCs were randomly selected from the three types of CC (GP, employed by an agency and full-time employed by an agency).

Mid-trial evaluation activities in relation to service providers included:

- ? a service managers' mid-trial questionnaire to all managers attending the November 1998 strategic planning workshop;
- ? a focus group of GPs from the Division of General Practice, December 1998. Through the Division of General Practice, 28 GPs were approached to participate in a focus group in December 1998. Eleven GPs attended the focus group, seven of whom were CCs and four who had patients in the trial but who were not CCs; and
- ? a mid-trial CC questionnaire to all CCs distributed in November 1998.

End of trial information was gathered from service provider staff, volunteers and managers, GPs and CCs:

- ? the baseline instruments were repeated in November 1999 (service staff and volunteer questionnaire, service provision data questionnaire and GP questionnaire to 380 GPs).
- ? the mid-trial instruments were also repeated in November 1999 (service managers end of trial questionnaire and end of trial CC questionnaire).

In addition, the Health Insurance Commission (HIC) provided information on patterns of local GP test ordering and consultations to provide comparative measures of the differences between GPs who were CCs and others, and between the Intervention and Control areas.

Part B Findings

3. Service Delivery

3.1 Service Provider Profile

The *Service Provider Baseline Report – Service Delivery Description* (1999) provided a baseline from which to compare availability and service delivery processes at the end of Linked Care. However, given this function, it also noted that some of the directions of change for Linked Care were already in progress and were necessitated largely by the limits on budgets and resources and the increasing demands for service from more clients. The existing directions of change were therefore similar to the objectives of Linked Care, focusing on opportunities for improved efficiency within agencies as well as greater cooperation between them.

The report also noted that over the two-year period, the evaluation would be able to observe changes in the scope of service delivery directly attributable to the Intervention. The report noted that improvements to service delivery in the health and community care sectors - advocated in both Linked Care and in other parallel strategies for change - would most likely be observed by the end of Linked Care. Within this context then, the following sections outline the changes in service delivery from the baseline to the end of Linked Care.

3.1 a Availability of Services

As with the baseline report, this *Service Provider Experience Report* is compiled from information from service providers and GPs which has been collected and analysed for the purposes of this evaluation. Three groups of service providers were examined: hospital-based services; community-based services; and GPs. There were four parts to the investigation: a data questionnaire of service providers, interviews with managers of the service providers, a written questionnaire to all GPs practising in the Hornsby Ku-ring-gai area, and administrative data provided by NSW funding Departments. In addition, HIC provided information on patterns of local GP test ordering and consultations in the Intervention and Control areas.

The profile presented here on service providers describes the extent of service availability in the Hornsby Ku-ring-gai area in terms of clients, finances, staffing and range of services. Despite the gaps in the data available, the tables provide a useful measure of service provision at the end of the trial. Tables are presented showing both baseline and end of trial information so that comparisons can be made.

The picture of the service system is one of interrelated service delivery. Agencies include public, private and voluntary services. Their care ranges from specialised medical intervention to personal care in the community. Of interest to Linked Care was not only the range of services, but also how these services interrelated, through referrals and other information exchange. Potentially Linked Care could have changed both the assistance provided to clients and the links between the providers.

3.1 b Hospital-based Services

The first service group to be explored is hospital-based services. Public hospital services are administered by the NSAHS. Hornsby Ku-ring-gai Hospital and Community Health Services (HKHCHS) is the regional public hospital in the Intervention area and Royal North Shore Hospital the major teaching hospital. In addition, many private hospitals supplement the public services and are accessed by the population in the trial area.

Client use of hospital services can be measured in terms of where clients accessed the services; what type of services they used and how often; and the demographics of the users. Data on these three categories were collected from the hospitals and Area Health Service. Little information was available about the second category of the types of services they accessed.

Information on hospital use was available in the form of hospital separations data, as opposed to admissions data. This included information on which hospital facilities were accessed and whether the length of stay was greater than one day. Tables 3.1 and 3.2 present comparative data on hospital separations for residents aged 65 years and older in the Hornsby Ku-ring-gai and Ryde Hunters Hill Local Government Areas (the Intervention and Control areas) at the beginning and end of the trial.

Table 3.1: Hospital Separations for Residents Aged 65 years and over in Hornsby Ku-ring-gai, 1997 and 1999

Hospital	Separations				Resident characteristics of inpatient clients							
	Multi-day n	Day only n	Total n	%	English speaking n %		NESB n %		Male n %		Female n %	
1997												
Private	49 636	7 697	13 677	56.2	13 493	58.5	184	14.1	5 712	52.7	7 961	59.0
Hornsby Ku-ring-gai	33 694	1 184	4 860	20.0	4 676	20.3	184	14.1	1 898	17.5	2 962	21.9
Royal North Shore	8 166	1 459	2 548	10.5	1 749	7.6	799	61.4	1 362	12.6	1 186	8.8
Concord Repatriation	2 211	929	1 197	4.9	1 165	5.1	32	2.5	875	8.1	322	2.4
Ryde	3 124	100	470	1.9	461	2.0	9	0.7	199	1.8	271	2.0
Neringah Home of Peace	9 046	10	444	1.8	431	1.9	13	1.0	176	1.6	268	2.0
Lady Davidson	5 003	3	232	1.0	231	1.0	1	0.1	139	1.3	93	0.7
Westmead	876	99	230	0.9	212	0.9	18	1.4	149	1.4	81	0.6
Royal Prince Alfred	1 033	61	203	0.8	176	0.8	27	2.1	107	1.0	96	0.7
Sydney Hospital	297	21	106	0.4	91	0.4	15	1.2	43	0.4	63	0.5
ALL	116 460	11 680	24 353	100.0	23 051	94.7	1302	5.3	10 849	44.5	13 500	55.4
1999												
Private	63 153	9 070	16 182	62.1	15 751	60.4	431	1.7	6 994	26.8	9 188	35.2
Hornsby Ku-ring-gai	33 212	1 334	4 711	18.1	4 546	17.4	165	0.6	1 977	7.6	2 734	10.5
Royal North Shore	7 515	1 798	2 819	10.8	1 999	7.7	820	3.1	1 344	5.2	1 475	5.7
Concord Repatriation	1 744	507	717	2.8	682	2.6	35	0.1	529	2.0	188	0.7
Ryde	2 347	116	408	1.6	387	1.5	21	0.1	163	0.6	245	0.9
Neringah Home of Peace	3 297	9	215	0.8	205	0.8	10	0.0	103	0.4	112	0.4
Lady Davidson	-	-	-	-	-	-	-	-	-	-	-	-
Westmead	1 537	145	305	1.2	278	1.1	27	0.1	167	0.6	138	0.5
Royal Prince Alfred	993	86	221	0.8	205	0.8	16	0.1	46	0.2	45	0.2
Sydney Hospital	242	37	91	0.3	74	0.3	17	0.1	46	0.2	45	0.2
All	118 901	13 222	26 071	100.0	24 492	93.9	1 579	6.1	11 614	44.5	14 457	55.5

Source: Northern Sydney Area Health Service (NSAHS) June 1998 and February 2000.

Note: The data set for 1999 is incomplete. Data for some private hospitals were not available at the time of compilation.

Table 3.2: Hospital Separations for Residents Aged 65 years and over in Ryde Hunters Hill, 1997 and 1999

Hospital	Separations				Resident characteristics of inpatient clients							
	Multi day n	Day only n	Total n	%	English speaking		NESB		Male		Female	
					n	%	n	%	n	%	n	%
1997												
Private	16 600	1 498	3 435	28.6	3 300	29.8	135	14.2	1 541	28.4	1 890	28.6
Ryde	20 518	624	3 008	25.0	2 911	26.3	97	10.2	1 221	22.5	1 787	27.1
Concord Repatriation	8 354	1 452	2 494	20.7	2 225	20.1	269	28.3	1 382	25.5	1 112	16.9
Royal North Shore	5 618	1 193	1 884	15.7	1 570	14.2	314	33.1	710	13.1	1 174	17.8
Royal Prince Alfred	1 340	66	242	2.0	205	1.9	37	3.9	129	2.4	113	1.7
CBJD	6 591	0	205	1.7	178	1.6	27	2.8	65	1.2	140	2.1
Hornsby Ku-ring-gai	576	38	97	0.8	85	0.8	12	1.3	43	0.8	54	0.8
Greenwich Home of Peace	2 107	2	90	0.7	82	0.7	8	0.8	34	0.6	56	0.8
Lady Davidson	1 913	0	87	0.7	87	0.8	0	0.0	59	1.1	28	0.4
Sydney Hospital	221	21	78	0.6	62	0.6	16	1.7	33	0.6	45	0.7
ALL	79 209	5 016	12 020	100.0	11 070	92.1	950	7.9	5 419	45.1	6 597	54.9
1999												
Private	13 798	2 252	3 973	29.7	3 707	27.7	266	2.0	13.9	1875	2 116	15.8
Ryde	2 347	116	408	3.0	387	2.9	21	0.2	163	1.2	245	1.8
Concord Repatriation	675	91	187	1.4	2 142	16.0	365	2.7	1 546	11.6	961	7.2
Royal North Shore	7 515	1 798	2 819	21.5	1 999	14.9	820	6.1	1 344	10.0	1 475	11.0
Royal Prince Alfred	993	86	221	1.7	205	1.5	16	0.1	121	0.9	100	0.7
CBJD	-	-	-	-	-	-	-	-	-	-	-	-
Hornsby Ku-ring-gai	33 212	1 334	4 711	35.2								
Greenwich Home of Peace	1 201	4	54	0.4	52	0.4	2	0.0	14	0.1	40	0.3
Lady Davidson	-	-	-	-	-	-	-	-	-	-	-	-
Sydney Hospital	242	37	91	0.7	74	0.6	17	0.1	46	0.3	45	0.3
All	77 917	6 525	13 378	100.0	11 975	89.5	1 403	10.5	6 573	49.1	6 805	50.9

Source: Northern Sydney Area Health Service (NSAHS) June 1998 and February 2000.

Note: The data set for 1999 is incomplete. Data for some private hospitals were not available at the time of compilation.

The data show that Hornsby Ku-ring-gai residents used inpatient services from a large number of facilities, although most of the use was concentrated in public and private facilities in the local area. In 1997, Hornsby Ku-ring-gai residents were recorded as using 72 public hospitals; and Ryde Hunters Hill residents used 65 public hospitals. Women and men had similar patterns of hospital use in both areas.

There was a high use of private health care, especially by the Intervention group and by people from an English speaking background. In the Intervention area (Hornsby Ku-ring-gai), over the period of the trial, private hospital use rose from 43 per cent of total multi day hospital separations in 1997 to 53 per cent in 1999. As was observed at baseline, Control area residents (Ryde Hunters Hill) continued to use fewer private hospital services than the Intervention group. Over the period of the trial, private hospital use actually decreased slightly for Ryde Hunters Hill residents. In 1997, 21 per cent of total multi-day hospital separations involved private hospital usage, whereas by 1999 it was 18 per cent. However,

it should be noted that some private hospital data were not available to the evaluators at the end of the trial, and the observed decrease may be in part due to the incomplete data set.

Hornsby Ku-ring-gai Hospital and Community Health Services (HKHCHS) is the regional public hospital in the Intervention area. It contributed to the Linked Care fund pool and subcontracted care coordination services to Linked Care through the Aged Care Assessment Team (ACAT). For these reasons, HKHCHS was included in the baseline data questionnaire to collect additional client profile data (Table 3.3). End of trial data was not available to the evaluators.

Table 3.3: Hornsby & Ku-ring-gai Hospital & Community Health Services Client Profile (estimates) 1996-97

		Total	Inpatient	Non- Inpatient ^(a)
1. Number of clients				
Clients receiving help		48 849	17 249	31 600
Referrals		26 500	8 500	18 000
% Referrals as a per cent of clients		54	49	57
Clients in a typical week		980	330	650
2. Client demographics				
	HK general population ^(b)	Average (percentage)		
% clients over 65 years	14	33	35	30
% clients women	52	60	57	62
% clients NESB	15	5	4	5
% clients ATSI	0	0	0	0

Source: Baseline service data questionnaire

Notes: (a) Except ACAT & MOW services; included with community-based services in Table 3.8

(b) ABS Census 1996, Hornsby Ku-ring-gai LGAs.

The entire local population can potentially access public hospital services. In the baseline data questionnaire, according to HKHCHS managers, almost 50 000 clients received services from HKHCHS in 1996-97 (48 849), most of these receiving non-inpatient services (31 600). New referrals amounted to only 54 per cent of clients serviced, suggesting a slow turnover of clients. One-third of all occasions of service were provided to clients aged over 65 years (33 per cent). This may be compared to the general Hornsby Ku-ring-gai population where 14 per cent are aged over 65 years. More than half the HKHCHS clients were women (60 per cent).

Few clients were from a NESB (5 per cent) or were Aboriginal or Torres Strait Islanders (none reported). This contrasts with the general Hornsby Ku-ring-gai community where 15 per cent were from a NESB. It also contrasts with NSAHs reported hospital separations in Table 3.1, where 14 per cent of HKHCHS clients were reported to be from a NESB.

Hospital-based Financial Profile

As well as client service use, financial data is a significant baseline measurement of hospital-based service use. NSAHS expenditure data in the program category most relevant to this trial, Rehabilitation and Extended Care, was compared in the two major public hospitals, Hornsby Ku-ring-gai and Royal North Shore. End of trial data were not available to the evaluators.

According to financial data from the annual reports, summarised in Table 3.4, the proportions spent in each category of hospital expenses in the NSAHS and hospitals, although broadly comparable, appear to have some variation.

As expected, the majority of costs were associated with human resources. The NSAHS spent 44 per cent of its budget on wages. A high proportion of total expenses was also spent on other expenses (43 per cent). Similarly, 63 per cent of Royal North Shore Hospital expenses were spent on human resources compared to the slightly higher proportion of 70 per cent at Hornsby Ku-ring-gai Hospital, probably reflecting the different activities of a teaching and a regional hospital.

Table 3.4: Financial Data for Northern Sydney Area Health Service and Hospitals 1996-97 (\$000's)

	NSAHS (Rehabilitation & Extended Care)		Hospitals			
			Hornsby Ku-ring-gai		Royal North Shore	
	\$	%	\$	%	\$	%
Expenses – wages, on-costs	28 113	44	45 450	70	150 800	63
Expenses – non-wages	7 748	12	1 316	21	68 500	29
Repairs, maintenance, renewals	1 041	2	2 141	3	6 600	3
VMOs	n.a.		3 230	5	7 500	3
Other	27 617	43	0	-	6 600	3
Total expenses	64 519	100	64 637	100	240 000	100

Sources: Hornsby Ku-ring-gai Hospital; Annual Reports (NSAHS and Royal North Shore Hospital).

From the financial data above, it is clear that human resources are a significant aspect of hospital management. To generate data to further dissect this part of the baseline position of the hospital service provision, HKHCHS was asked to complete questions in the baseline data questionnaire about staffing. End of trial data were not available to the evaluators.

The hospital reported that it had more part-time staff and volunteers (860) than full-time staff (700) but the total staff hours of the former were less than total full-time staff hours; as illustrated in Table 3.5. This is a different profile to the community service agencies as described in more detail in Tables 3.10 and 3.11. Volunteers were more likely to be engaged in direct care tasks (60 per cent) than paid staff (35 per cent).

Table 3.5: Hornsby & Ku-ring-gai Hospital & Community Health Services Staff Profile (estimates) 1996-97

	Total staff	Staff hours per week
1. Staff numbers		
Paid full-time staff	700	26000
Paid part-time staff	360	9000
Volunteers	500	300
2. Staff tasks (% Time Spent)		
	Paid staff	Volunteers
Direct care	35	60
Organising care	25	10
Administration and management	20	10
Travel, training & other	20	20

Notes: Except ACAT & MOW (included with community-based services in Tables 3.10 and 3.11)

At the baseline the hospital-based staffing profile indicated that a significant proportion of paid staff time was already spent organising care (25 per cent); and even volunteers were reported as being involved in organising care 10 per cent of their time. It is conceivable that care coordination by Linked Care could have changed these patterns of care provision if Linked Care's care coordination had replaced, rather than supplemented existing organisational processes; or on the other hand, if they had encouraged greater internal coordination by HKHCHS staff.

The hospital liaison communication strategy and Hospital Issues Working Party attempted to build on these existing coordination functions within the HKHCHS inpatient service (Sections 4.4 d and 4.4 e). Unfortunately, end of trial data were not available regarding hospital based staffing and so it is not possible to comment on whether such a change occurred as a result of Linked Care. Given the small number of Linked Care clients using HKHCHS services it is unlikely that it had a measurable effect.

Implications for Linked Care

Linked Care clients and their associated hospital costs were a small proportion of total hospital patients and budget. Any impact of Linked Care on hospital services was therefore likely to be measurable mainly in terms of changes in client outcomes (*Local Evaluation Final Report*, Section 4.2) and possibly hospital substitution costs (see Chapter 6).

Implications for the Linked Care model from this hospital use data are that the provision of the costly inpatient services was likely to be spread among many facilities, both public and private. If it was intended that Linked Care should have had an impact on the use and cost of inpatient services there seem to have been two possibilities. Either CCs needed to have some influence over where clients received these services or Linked Care needed to negotiate with multiple facilities to establish processes to control the use of inpatient services. Given the limited scope of Linked Care, neither of these strategies occurred.

3.1 c Community-based Services

The second group of service providers to be examined is the community-based agencies. To describe community-based services in the Linked Care area, six organisations were asked to complete data questionnaires and interviews during the trial. They were agencies that either provided community-based services or coordinated their delivery. These were:

- ? the Rehabilitation and Aged Care Service, including the ACAT, at the HKHCHS;
- ? Hornsby Meals on Wheels;
- ? Northern Sydney Home Nursing Service;
- ? Hornsby Ku-ring-gai Home Care Service;
- ? Mercy Family Centre; and
- ? Neighbour Aid, as an example of a voluntary HACC agency.

The first three of these services were administered by the NSAHS or hospital; and the last three were at least partly funded under the HACC program through Ageing and Disability Department (ADD) or direct from the Commonwealth.

The data presented in this chapter are from the service providers' responses to data questionnaires and from ADD Area Reports. The data are divided into client usage data, a staffing profile, and financial data.

Community-based services were delivered by multiple agencies and varied in both availability and type by location. To compare total HACC service provision in the Intervention and Control areas over the period of the trial, ADD Area Reports in two sample months were examined. This ADD data included care provided by the six organisations surveyed for the evaluation and numerous other smaller community-based agencies, such as Ku-ring-gai Meals on Wheels (MOW) and voluntary organisations like Easy Care Gardening.

Community-based Client Profile

The profile of community-based services was one of many agencies serving nearly 3000 clients each month. The most frequently provided services in Hornsby Ku-ring-gai were food services, transport, home nursing, and home help; and that this varied slightly from the Control area, Ryde Hunters Hill, where home help was the service type provided to the most people. A comparison of the 1997 and 1999 ADD reports (as summarised in Tables 3.6 and 3.7) indicated that Intervention and Control areas continued to show a broadly similar pattern of service usage over the period of the trial, although some changes were also observed. The different reasons for these changes are discussed below.

Table 3.6: HACC Services in the Intervention and Control Areas, November 1997

	Hornsby Ku-ring-gai		Ryde Hunters Hill	
	persons assisted	hours/meals	persons assisted	hours/meals
Total	2 786	27 398	3 094	19 116
Total home help	549	3 111	993	3 525
- house keeping	301	-	705	-
- shopping	139	-	69	-
- social support	255	-	250	-
- linen/laundry	31	-	-	-
Personal care	102	1 965	129	1 773
Home nursing	607	3 129	411	1 673
Paramedical services	105	108	92	46
Respite care	139	1 867	199	2 126
Centre day care services	155	4 100	145	3 673
Total Food services	687	-	602	-
- home delivered meals	585	10 615	290	5 018
- centre meals	129	599	275	646
- other food services	3	15	54	172
Total Home maintenance and modification	171	1 138	113	-
- home maintenance	164	-	81	-
- home modification	7	-	32	-
Transport services	667	-	626	-
Other	248	711	192	464

Source: ADD Area Reports by LGA

Table 3.7: HACC Services in the Intervention and Control Areas, May 1999

	Hornsby Ku-ring-gai		Ryde Hunters Hill	
	persons assisted	hours/meals	persons assisted	hours/meals
Total	3 387	29 936	2 806	19 380
Total home help	931	4 747	980	3 056
- house keeping	691	-	694	-
- shopping	136	-	87	-
- social support	285	-	209	-
- linen/laundry	34	-	22	16
Personal care	483	4 492	138	2 105
Home nursing	423	1 475	338	1 260
Paramedical services	58	115	14	261
Respite care	164	2 268	169	1 461
Centre day care services	218	3 993	186	3 909
Total Food services	797	-	529	-
- home delivered meals	632	10 164	295	5 726
- centre meals	164	1 020	236	754
- other food services	1	7	36	86
Total Home maintenance and modification	196	1 343	80	145
- home maintenance	159	-	52	-
- home modification	37	-	28	-
Transport services	679	-	662	-
Other	96	312	249	601

Source: ADD Area Reports by LGA.

Notes: End of trial data for November 1999 were not available.

Total numbers of people assisted increased in the Intervention area and dropped in the Control area over the period of the trial, but these changes were not marked. Total numbers of people using food services also increased in the Intervention area and dropped in the Control area over the period of the trial, but again these changes were small. There was a slight increase in people receiving centre meals in the Intervention area in 1999 compared to 1997, but almost twice as many meals were served over this period. The Control area did not show a comparable increase in meals served over the trial period. Numbers of people receiving transport services in the Intervention and Control areas remained constant between 1997 and 1999.

Numbers of people using home nursing services also dropped in the Intervention area between 1997 and 1999, and the corresponding numbers of hours spent assisting these people decreased even more markedly by a little over two times. This effect was probably related to the prioritising of access because of capped budgets, both by rationing client accessing service and rationing the amount of care provided.² Numbers of people receiving home nursing service assistance in the Control area also decreased but to a lesser extent, and with no correspondingly large drop in hours spent assisting these people.

The number of people receiving home help almost doubled in the Intervention area over the period of the trial but there was no proportional increase in the hours spent assisting these people, perhaps due to a policy of broadening access to care by restricting hours per client.

Most significantly to Linked Care, the number of people receiving personal care services increased by four times during the course of the trial in the Intervention area. No similar increase was noted in the Control area over the period of the trial. In August 1998 Home Care Services capped personal care budgets. The large increase in the Intervention area could perhaps be due to the activities of Linked Care.

Additional data about client access to HACC services was collected by the evaluation and is presented in the tables below. The profile of client data is divided into the number of clients who received assistance and the demographics of these clients. Some caution should be taken interpreting these figures. The data were collected retrospectively from the agencies, and the definition of clients and referrals may not be consistent between agencies.

In the 1996-97 period over 8000 clients were reported to have received services from the community-based providers who completed the baseline data questionnaire; as shown in Table 3.8. This number had risen by almost a quarter to 9993 for the 1998-99 period as shown in Table 3.9. Similar increases were noted in total number of referrals and number of clients in a typical week. The total number of clients served would be less than these numbers because some clients received services from more than one service provider responding to the questionnaires.

² During this period the Northern Sydney Home Nursing Service also restructured (discussed in more detail in the *Whole of System Response Report*).

Table 3.8: Hornsby Ku-ring-gai Community-based Agencies Client Profile (estimates) 1996-97

	Total	MOW	NSHNS	Neighbour Aid	Home Care Service	Mercy Family Centre	ACAT
1. Number of clients							
Clients receiving help	8018	475	2293	250	1085	439	3476
Referrals	6226	185	1824	50	594	97	-
Referrals as a percentage of clients	43	39	80	20	55	22	-
Clients in a typical week	1725	230	521	44	714	216	-
2. Client demographics							
	HK general population ^(a)	Average(per cent)					
% clients over 65 years	14	88	90	81	95	83	95
% clients women	52	73	75	64	85	78	70
% clients NESB	15	6	1	0	4	9	7
% clients ATSI	0	0	0	0	0	0	0

Source: Baseline service data questionnaire

Notes: (a) ABS Census 1996, Hornsby Ku-ring-gai LGAs

Table 3.9: Hornsby Ku-ring-gai Community-based Agencies Client Profile (estimates) 1998-99

	Total	MOW	NSHNS	Neighbour Aid	Home Care Service	Mercy Family Centre	ACAT
1. Number of clients							
Clients receiving help	9993	450	2491	250	1555	883	4364
Referrals	7980	0	2066	50	1080	420	4364
Referrals as a percentage of clients	53	0	83	20	69	48	100
Clients in a typical week	2130	198	423	44	933	452	80
2. Client demographics							
	HK general population ^(a)	Average(per cent)					
% clients over 65 years	14	86	80	79	95	80	94
% clients women	52	72	68	61	85	77	67
% clients NESB	15	7	1	0	4	13	13
% clients ATSI	0.2	0	0	0	0	0	0

Source: End of trial service data questionnaire

Notes: (a) ABS Census 1996, Hornsby Ku-ring-gai LGAs

Service by service, similar increases in numbers of clients receiving help were noted for the Aged Care Assessment Team. A smaller increase was noted for Northern Sydney Home Nursing Service. Large increases in numbers of clients receiving help were recorded by

Home Care Service and Mercy Family Centre, the first increasing clients numbers by almost half and the second doubling client numbers over the trial period. Neighbour Aid provided help to the same numbers of clients and Meals on Wheels provided help to fewer clients. The client demographics of the agencies surveyed did not change markedly over the course of the trial.

These agencies served a large client base over the trial period, new referrals were reported to have replaced less than 50 per cent of clients at the beginning of the trial. This number had risen to a little over 50 per cent by the end of the trial. This could have presented several opportunities for Linked Care, including assisting agencies to refine processes to facilitate turnover of clients when their needs were satisfied, and to efficiently meet the needs of new referrals either through prioritising demands or referring to other agencies. The short duration of the trial probably prevented this level of Linked Care intervention in the service delivery processes of the participating service providers.

Community-based Staffing Profile

Another dimension of community-based service provision in Hornsby Ku-ring-gai is the staffing profile. The data presented here were self-reported from the service provider baseline and end of trial questionnaires. They are divided into the characteristics of the employment relationship and the tasks in which the staff are involved (Tables 3.10 and 3.11).

Most agencies reported relying on more part-time and volunteer staff than full-time staff both in terms of the number of staff and the hours of care provided over the period of the trial. Total numbers of full and part-time staff and volunteers rose over the course of the trial, most significantly so for part-time workers who almost doubled in number. Similar increases were noted in total staff hours worked per week for full and part-time staff, again, part-time staff hours almost doubling over the course of the trial. This was not the case, however, for volunteers. Total staff hours worked per week halved over the course of the trial for volunteers. There was no indication that these changes were due to Linked Care, except perhaps related to the increase in personal care in the Home Care Service discussed above.

Staff tasks also changed across all agencies over the period of the trial. Notably, organising care dropped during the course of the trial from 28 per cent to 8 per cent (a similar trend was not noted for volunteer workers). This is probably due to changes in reporting between the two questionnaires rather than changes in practice. The decrease was in part due to two smaller agencies reporting they spent no time on organising care at the end of the trial. Even when considering only the larger agencies that subcontracted CCs to Linked Care, there was still a reported decrease in time spent organising care.

Table 3.10: Hornsby Ku-ring-gai Community-based Agencies Staff Profile (estimates) 1996-97

	Total	Average or per cent	MOW	NSHNS	Neighbour Aid	Home Care Service	Mercy Family Centre	ACAT
1. Number of staff		Average						
Paid full-time staff	56	9	1	38	0	5	5	7
Paid part-time staff	176	29	2	12	2	93	61	6
Volunteers	239	80	100	-	75	-	64	-
2. Staff hours per week								
Paid full-time staff	2117	353	40	1444	0	175	190	268
Paid part-time staff	3118	520	35	188	40	1925	831	99
Volunteers	490	163	300	-	165	-	25	-
3. Paid staff tasks		Average %	%	%	%	%	%	%
Direct care		47	50	65	-	77	43	-
Organising care		28	25	15	60	10	30	-
Administration and management		17	25	15	30	3	10	-
Travel, training & other		8	0	5	10	10	17	-
4. Volunteer tasks								
Direct care		85	100	-	75	-	80	-
Organising care		0	0	-	0	-	0	-
Administration and management		7	0	-	20	-	0	-
Travel, training & other		8	0	-	5	-	20	-

Table 3.11: Hornsby Ku-ring-gai Community-based Agencies Staff Profile (estimates) 1998-99

	Total	Average or per cent	MOW	NSHNS	Neighbour Aid	Home Care Service	Mercy Family Centre	ACAT
1. Number of staff		Average						
Paid full-time staff	63	13	2	34	0	5	12	11
Paid part-time staff	334	67	0	13	2	195	113	13
Volunteers	358	72	297	0	75	-	61	-
2. Staff hours per week								
Paid full-time staff	2251	450	76	1292	-	175	456	442
Paid part-time staff	5932	1,483	0	211	35	3898	1808	226
Volunteers	241	48	100	0	165	-	141	-
3. Paid staff tasks		Average %	%	%	%	%	%	%
Direct care		55	50	65	55	61	60	50
Organising care		8	0	15	0	10	12	10
Administration and management		20	50	15	35	8	10	10
Travel, training & other		15	0	5	10	21	8	30
4. Volunteer tasks								
Direct care		75	60	0	75	-	90	-
Organising care		3	0	0	0	-	5	-
Administration and management		0	0	0	20	-	0	-

Travel, training & other	23	40	0	5	-	5	-
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Community-based Financial Profile

The final way of describing the community-based services is in relation to the financial management. Most community-based services were funded in one of three ways. The ADD administers the joint Commonwealth and State funded HACC program. Most HACC agencies receive this funding directly through ADD. A second group of agencies receive their HACC funding indirectly, through the NSAHS or hospital. A third, smaller group of agencies receives funding directly through the Commonwealth Department of Health and Aged Care. Such monies include funding packages such as CACPs. In the Hornsby Ku-ring-gai area the first group included Neighbour Aid and the Home Care Service; Mercy Family Centre received funding through both ADD and through packages; and Hornsby Meals on Wheels, Northern Sydney Home Nursing Service and the Aged Care Assessment Team received their funding through the NSAHS and hospital structures.

The second aspect of financial management is the size and expenses in agency budgets. Only very general financial data were available from the service providers through the baseline and end of trial data questionnaires. Most revenue was reported to have been received from the Commonwealth and State HACC program, supplemented by other State funding over the period of the trial (Tables 3.12 and 3.13).

In the 1998-99 period Commonwealth and State (HACC) funding for Hornsby Ku-ring-gai based agencies dropped to 49 per cent of the total operating budget for all agencies from 67 per cent in 1996-97. Conversely, other state funding increased from 19 per cent of the total operating budget of all agencies in 1996-97 to 36 per cent in 1998-99. Client fees, co-payments and donations remained at 12-14 per cent.

Mercy Family Centre (MFC) experienced the largest increases in Commonwealth and State funding; a 188 per cent increase from the 1996-97 to the 1998-99 period. A similar increase was noted for wages. These increases were consistent with MFC also experiencing a 100 per cent increase in client numbers for the same period. Northern Sydney Home Nursing Service also recorded an increase in Commonwealth and State funding, 31.5 per cent from the 1996-97 to 1998-99 period (although client numbers only increased by 8.6 per cent).

Large increases in other State funding were also noted for Mercy Family Centre (140 per cent), and Northern Sydney Home Nursing Service (158 per cent). The Aged Care Assessment Team recorded a much smaller increase of 32.6 per cent in other State funding

In the case of the Mercy Family Centre these large increases in Commonwealth and State funding were supplemented by increases in client fees, co-payments and donations which rose from \$147,087 in the 1996-97 period to \$1,092,373 in the 1998-99 period, a 642 per cent increase. It would appear that Mercy Family Centre had extended its case management focus in service provision over the period of the trial, probably due to attracting a higher number of aged care packages.

Table 3.12: Hornsby Ku-ring-gai Community-based Agencies Financial Data (estimates) 1996-97

	Total		MOW	NSHNS	Neigh- bour Aid	Home Care Service	Mercy Family Centre	ACAT
	\$	%						
1. Revenue								
Commonwealth & State (HACC)	4 746 769	67	-	1 818 770	44 818	2 215 360	330 821	337 000
Other State funding	1 325 135	19	121 844	265 502	-	-	776 789	161 000
Client fees, co-payments, donations	859 253	12	246 456	-	1 765	463 945	147 087	-
Other	127 737	2	1 762	125 000	-	975	-	-
Total operating budget	7 058 894	100	370 062	2 209 272	46 583	2 680 280	1 254 697	498 000
Other in-kind support				rent	rent			
2. Expenses								
Wages & on-costs	5 675 564	81	81 363	1 964 060	35 663	2 311 647	785 431	497 400
Expenses - non-wages	1 308 534	19	-	245 212	7 940	305 155	434 042	19 000
Total expenses	6 984 098	100	378 548	2 209 272	43 603	2 616 802	1 219 473	516 400

Source: Baseline service data questionnaire

Table 3.13: Hornsby Ku-ring-gai Community-based Agencies Financial Data (estimates) 1998-99

	Total		MOW	NSHNS	Neigh- bour Aid	Home Care Service ^(b)	Mercy Family Centre	ACAT
	\$	%	(a)					
1. Revenue								
Commonwealth & State (HACC)	3 745 066	49	-	2 392 268	46 400	-	953 648	352 750
Other State funding	2 769 677	36	-	685 811	-	-	1 870 340	213 526
Client fees, co-payments, donations	1 094 423	14	-	-	2 050	-	1 092 373	-
Other	24 900	0	-	-	-	-	24 900	-
Total operating budget	7 609 166	100	-	3 078 079	48 450	-	3 916 361	566 276
Other in-kind support	-	-			rent		24 900	
2. Expenses								
Wages & on-costs	6 039 007	80	-	3 003 344	40 296	-	2 506 471	488 896
Expenses - non-wages	1 517 035	20	-	74 235	4 030	-	1 361 390	77 380
Total expenses	7 556 542	100	-	3 078 079	44 326	-	3 867 861	566 276

Source: End of trial service data questionnaire

Notes: (a) Data are not available for this service

(b) Comparison of data is not possible as Hornsby Home Care Service amalgamated with the Ryde Home Care Service over the trial period.

3.1 d General Practitioners

The third type of service was the primary health care provided by GPs. The results of two questionnaires of GPs within the Linked Care trial evaluation are presented throughout this report. The full reports and summaries are also available from Linked Care, *Baseline Survey of General Practitioners in Hornsby Ku-ring-gai, Report for the local evaluation of the Linked Care Trial* (May 1998) and *Survey of General Practitioners in Hornsby Ku-ring-gai, Report for the local evaluation of the Linked Care Trial* (February 2000).

The questionnaires achieved response rates of 62 per cent and 57.7 per cent respectively. Demographic information of GPs responding to the 1997 and 1999 questionnaires are summarised in Table 3.14.

Table 3.14: Summary of Demographic Information of GPs, 1997 and 1999

Demographic information	1997 (n=197)		1999 (n=210)	
Sex	Male	55%	Male	50%
	Female	45%	Female	50%
Year of graduation	Earliest	1947	Earliest	1928
	Median	1978	Median	1978
	Latest	1992	Latest	1998
Years practising as a GP	Least	1	Least	1
	Median	15	Median	15
	Most	50	Most	50
Years practising in Hornsby Ku-ring-gai	Least	1	Least	1
	Median	10	Median	10
	Most	49	Most	49
Estimated percentage of patients aged 65 or over	0-5%	10%	0-5%	10%
	6-10%	20%	6-10%	20%
	11-20%	22%	11-20%	22%
	21-30%	21%	21-30%	21%
	31-50%	19%	31-50%	19%
	51-80%	9%	51-80%	9%

Sources: GP questionnaire, 1997 and 1999

Most GPs in the area appeared to serve a general population of all age groups throughout the period of the trial; only 28 per cent of GPs reported having more than one-third of their patients aged 65 years and over.

The aim of the questionnaires was to describe GPs' knowledge and attitudes to the Linked Care trial and its impact on their role as coordinators of care for people with complex care needs. The first questionnaire was conducted very early in the trial, when few GPs had much direct involvement in Linked Care. The second questionnaire captures a further two years' experience and reflects attitudes at the end of the trial.

All data were entered and analysed in Epi-info. Each questionnaire was analysed using simple tabulations and chi square tests for comparisons within each questionnaire. The second questionnaire was also analysed for differences between GPs who had and had not been CC for at least one patient, and for those who did or did not report having at least one patient in Linked Care. The results of the two questionnaires were then compared, first by using chi square tests to compare the responses of the whole samples and then by comparing individual responses to each question by GPs who had taken part in both questionnaires, using McNemar's chi square.

The main findings of the questionnaires are as follows:

- ? the overwhelming majority of GPs were aware of Linked Care.
- ? most GPs had only a few patients in Linked Care - the median number was two. Just over a third of GPs reported acting as CCs and the vast majority of these had done this for only one or two patients.
- ? few GPs reported that Linked Care had caused any problems for their patients.
- ? a minority of GPs reported difficulties in referring patients to or communicating with other services. More reported difficulties with community services than with nursing and allied health services, and fewest with specialists. The level of difficulties did not change significantly through the trial.
- ? almost all GPs reported that their patients saw them as coordinating their clinical care, but significantly fewer thought this applied to community care. This did not change through the trial.
- ? GPs were generally satisfied with the quality of care that they could provide and believed that they were able to act as effective advocates for their patients. These attitudes did not change through the trial.
- ? in the first questionnaire most GPs found organising and coordinating care satisfying but thought that they were not adequately remunerated for it, while more than a third thought it took too much time. In the second questionnaire more GPs thought they were adequately remunerated for coordinating care but fewer found it satisfying.
- ? the largest proportion of GPs was non-committal in both questionnaires about the likely balance of benefits and disadvantages of Linked Care. However by the end of the trial significantly more thought that Linked Care would not, on balance, benefit GPs.

The evaluators also requested comparative health insurance data on consultation and test ordering from the Health Insurance Commission (HIC) for all GPs in the Intervention and Control areas from 1997 to 1999. The aim was to examine HIC data for all patients (Linked Care clients and others) seen by comparative groups of GPs during the June quarters of 1997, 1998, and 1999 in order to:

- ? compare differences between GP CCs; GPs who were not CCs but who had some patients in Linked Care (both in the Intervention area and Control area); and GPs with no patients in Linked Care (both in Intervention and Control areas); and
- ? analyse differences between these groups and change over time in GP consultation rates and ordering of imaging and pathology tests.

The hypothesis was that participating in Linked Care may have global effects on how GPs managed all the patients - affecting the frequency they asked patients to attend or order tests even for patients who were not included in Linked Care. It also provided an opportunity in the Intervention area to examine whether at the baseline there were differences between the types of GPs who volunteered to become CCs and others.

The findings are presented in the tables in Appendix 4. The global effect in the Intervention area was a reduction in GP consultations whether GPs had patients who were trial clients or not (Tables A4.12 and A4.13). The reason for this change, and whether it was related to Linked Care, was unclear. Changes in rates of ordering imaging and tests did not appear to be associated with Linked Care (Table A4.14) although the data did reveal some differences, both between the groups and over time.

3.1 e Service Delivery Processes

Service profiles can be described in terms of the processes of service delivery. This was explored through the service managers, service staff and volunteers and GPs' perceptions. These were used at the end of the trial to identify change over the period attributable to Linked Care itself or to other external influences.

Health and community care services delivered in the Hornsby Ku-ring-gai area appeared to operate in a highly developed, complex system of interrelated service delivery. Players included public, private and voluntary services. They ranged from specialised medical interventions to personal care in the community. Of interest to Linked Care was not only the range of services, but also how these services interrelated, through referrals and other information exchange. Potentially Linked Care could change both the assistance provided and the links between the providers.

The existing range of care and service providers in the health and community service sectors in Hornsby Ku-ring-gai was broad. Their client base had more diverse needs than those of Linked Care target group. The target group itself used services from providers both in and outside the Intervention area. This breadth of service provision presented challenges to clients attempting to access appropriate care and challenges to coordination of services for those who had access.

The health and community service sectors had already identified these complexities and in various ways were coping with the multiplicity of service types and service providers. Linked Care was therefore operating in a context of larger changes, with similar goals to those of Linked Care, aiming to improve service delivery.

The providers each served a similar client base, without explicit coordination mechanisms. Perhaps because of the intricate network of service provision, providers managed to both ration services in an attempt to maximise client access to the limited resources, and also spread referrals between the various services to meet the most urgent client needs. Once clients received care, there seemed to be few processes for changing the type or amount of care clients received. Observing the effectiveness of the informal links between services, this suggests that the current processes work reasonably well to match need and services.

Presented in this section, service delivery processes were described by the managers from the point of entry into the sectors, through allocation of services, review and client turnover. In addition links between services including care coordination were discussed. The processes were as reported by the service provider managers and GPs. Opportunities to verify the information from other sources were not available to the evaluators.

Entry to Services

To enter health and community care services potential clients must first gain access, satisfying providers of their need through some form of assessment, and negotiating the referral and allocation processes until they are matched with available care.

In the context of frequent referral between service providers, the question of sharing assessment data was investigated. Assessment processes were reported as being sometimes duplicated and not consistent between agencies. It appears that some service providers were attempting to reform assessment processes to improve integration and efficiency. Trends indicating this were: the conduct of joint assessments; sharing assessment information when referrals were made; adoption of a shared client information instrument (CIARR); and using simpler assessments, such as telephone assessments, in standard referral situations.

Access to most services was reported to be flexible, through mechanisms ranging from direct contact by potential clients to referrals from other service providers. It appears that entry to services could be haphazard, depending on where a potential client tried to enter the system. The multiple points of entry and referral no doubt worked to the advantage of the persistent and articulate clients and those supported by knowledgeable service providers. However, it is probable that others fell between the gaps and only managed effective entry at a later crisis point.

The potential drawback of relying on this type of critical management of clients' health and community service needs is that it may not be the most effective from the perspective of the client or the health and community care sectors. It may indicate an inappropriate use of resources such as missed opportunities for prevention or less interventionist care.

Such conclusions can only be hinted at as possibilities because of the absence of data on these issues. Without consistent assessment procedures it is not possible to quantify the needs, let alone the response to alternative assistance. Indeed observation of the apparent effectiveness of the links between services suggests the system was not in a state of crisis due to lack of integration, but more possibly due to lack of resources to match the ever increasing demand for services.

Managing Demand

Processes to cope with the demand for new or more services from clients were one of the major management concerns raised. The strategies used by service providers to manage demand were: only providing assistance to existing clients; allocating available services at internal coordination meetings; referring clients to alternative agencies; placing clients on waiting lists; and providing less care per client. Data in Table 3.7 showed that providing less

care per client and rationing services did occur in some services during the trial period. Tables 3.15 and 3.16 present the changes on waiting list management for service providers in the Intervention area over the trial period.

Table 3.15: Size and Length of Waiting Lists (percentage, weeks) December 1997

	Home Care Service	Mercy Family Centre	Aged Care Assessment Team	HKHCHS Inpatient	HKHCHS Non-Inpatient
Average no. on waiting list over the last 4 weeks	60	7	-	560	500
% Waiting less 1 week	-	-	-	10	5
% Waiting 1 to < 4 weeks	-	71	-	15	30
% Waiting 4 to < 12 weeks	40	29	-	50	50
% Waiting 12 weeks or more	60	-	-	25	15

Source: Baseline service data questionnaire

Table 3.16: Size and Length of Waiting Lists (percentage, weeks) December 1999

	Home Care Service	Mercy Family Centre	Aged Care Assessment Team	HKHCHS Inpatient ^(a)	HKHCHS Non-Inpatient ^(a)
Average no. on waiting list over the last 4 weeks	630	100	50	-	-
% Waiting less 1 week	0	2	46	-	-
% Waiting 1 to < 4 weeks	0	1	30	-	-
% Waiting 4 to < 12 weeks	0	17	24	-	-
% Waiting 12 weeks or more	100	80	0	-	-

Source: End of trial service data questionnaire

Note: (a) Data are not available for December 1999

Two of the three agencies on which waiting list information was gathered showed large increases in numbers of clients on waiting lists over the trial period, and higher percentages of people waiting for longer periods at the end of the trial, compared to the beginning. The third agency on which information was gathered, the Aged Care Assessment Team, did not have a formal client waiting list at the beginning of the trial but had 50 clients waiting for service by the end of the trial, 24 per cent of them waiting on average longer than four weeks.

Because community service providers operated within fixed budgets, they appeared to act informally as gatekeepers to the limited resources by balancing the best interests of one client against multiple client needs. They reported that it was not in the providers' interest to over-service one client since it meant that other potential clients may receive no assistance.

Managers claimed that demand was generally managed through prioritising demand rather than by maintaining waiting lists.

Linked Care appeared to facilitate more rapid entry to services for its participants compared to clients not in Linked Care who waited for service due to capped budgets.³ However, service providers were also concerned about inequity with clients not in the trial (Section 5.2).

Duration of Service Delivery

The next steps in the management of service delivery are procedures for review and turnover of clients. Exit processes described by the service managers seemed to be almost self-managed by clients. Except for the hospital-based services, duration of service appeared to be long, turnover of clients low, and few providers reported formalised review mechanisms. Once a client received some level of care it appeared that they generally had priority over persons outside the service until they no longer needed or wanted care. Tables 3.17 and 3.18 present the data about the estimated duration of service provision for current clients in the Intervention area.

Table 3.17: Estimated Duration of Service Provision for Current Clients December 1997 (percentage)

	Average	MOW	NSHNS	Neighbour Aid	Home Care Service	Mercy Family Centre	ACAT	HKHCHS Inpatient ^(a)	HKHCHS Non- Inpatient ^(a)
Percentages									
Single visit or event	13	-	9	3	-	-	-	55	35
Less than 2 weeks	8	5	12	2	-	-	25	10	10
2 weeks to <1month	10	15	12	-	-	15	-	10	25
1 to 3 months	19	15	35	10	2	5	60	10	15
Over 3 to 6 months	9	15	17	-	13	10	-	10	5
Over 6 months	42	50	15	85	85	70	15	5	10
	100								

Source: Baseline service data questionnaire

Note: (a) Hornsby Ku-ring-gai Hospital and Community Health Services; excluding ACAT

Table 3.18: Estimated Duration of Service Provision for Current Clients December 1999 (percentage)

	Average	MOW	NSHNS	Neighbour Aid	Home Care Service	Mercy Family Centre	ACAT	HKHCHS Inpatient ^(a)	HKHCHS Non- Inpatient ^(a)
Percentages									
Single visit or event	5	0	-	3	0	0	20	-	-
Less than 2 weeks	8	5	-	0	0	0	25	-	-
2 weeks to <1month	3	0	-	0	0	1	10	-	-

³ Service personnel end of trial questionnaire comments, November 1999.

1 to 3 months	6	0	-	7	2	2	20	-	-
Over 3 to 6 months	7	10	-	0	0	4	15	-	-
Over 6 months	71	85	-	90	98	93	10	-	-
	100								

Source: End of trial service data questionnaire

Note: (a) Data unavailable at the end of the trial

Single client visits or events decreased over the trial period from 13 per cent of total client numbers across all agencies surveyed in 1997 to 5 per cent in 1999. All agencies surveyed except ACAT reported increased percentages of clients receiving service for over six months. These data support the view that agencies were prioritising service for existing clients and taking on fewer new clients over the trial period. Linked Care clients were also prioritised, as one service provider commented at the end of the trial “the clients on the Linked Care trial appeared to receive a greater range of services and for a more realistic amount of time”.

Some of the issues that these data raise could have been taken up by Linked Care as opportunities for incrementally improving the processes of health and community service delivery. These opportunities included: integrated access and assessment processes; information about the range and cost of services; and review and discharge planning. Again the limited scope and duration of the trial prevented this level of intervention in service delivery processes.

Cost and Charges

Integral to the Linked Care Intervention was the management of the cost of services and of the total health and community service funds held by service providers or contributed by clients. The evaluation examined the costs to the provider; the equity of funding allocations to each client; and co-payments made by clients. The investigation attempted, with only limited success, to collect cost data from service providers.

The first question to address in relation to funding is the cost of care, particularly comparative costs for similar services. Different service providers in the Intervention area apparently provided similar forms of assistance. Duplication of services may have been appropriate in this context with the possible drawback of distorting demand, access or cost. The investigation seemed to reveal that there was some distortion through differential service availability to clients, possibly affecting the level of care clients received, the mix of services available to them and the stability of that care.

Implications for Linked Care related to the variable cost to the fund pool of accessing potentially similar care from different providers. Linked Care was restricted in its ability to address these anomalies by pre-existing relationships between clients and providers, and the ‘preferred provider’ status of fund pool contributors.

A second cost issue is the affordability of the care to the client due to the charging practices of each provider. In this respect the spectrum of client cost varied greatly from medical and nursing care to community and social services. Despite this variation, it appeared that under the baseline charging processes affordability was not an issue for clients because co-payments were means tested or were set so low that they were unlikely to affect demand for services.

In the context of Linked Care, the expectations of clients for cost contribution may have been shaped by their prior contact with service providers' charging mechanisms. If, for example, they were only familiar with accessing free NSAHS services, they may be reluctant to change to a HACC provider that expected some level of co-payment. One client, for example, complained to the CC that substituting personal home care for home nursing cost Linked Care less but the client more.⁴

While clients were not involved in decisions about allocation of resources from the fund pool or how financial arrangements of the trial, clients continued to contribute to service costs. The participant questionnaire showed payments for Intervention clients decreased over the course of the trial. Linked Care appeared to interfere with the practices for means-testing of clients. It appeared that CCs and services were less inclined to request a client contribution from Linked Care clients, probably because they were aware the cost would be covered by the fund pool.

3.1 f Issues and Results

Several interesting observations can be made from the data presented in this section. The vast and complex care provision, short duration of the trial and small and reducing number of clients mitigated against Linked Care having a significant influence of service delivery processes. For example, in the context of the wide use of inpatient services from many facilities, both public and private the Linked Care administration or CCs needed to have some influence over where clients received these services, yet this was unrealistic given the infrequency of inpatient events.

A most significant change in the community-based sector, the number of people receiving personal care services increased by four times during the course of the trial in the Intervention area. No similar increase was noted in the Control area over the period of the trial. The large increase in the Intervention area could perhaps be due to the activities of Linked Care. However, it appears that this increase in personal care did not amount to a corresponding decrease in other services, particularly inpatient care. This again could be perhaps due to this short duration of the trial.

Hypothesis 9 of the evaluation also stated (Appendix 3) that such changes should not disadvantage clients outside Linked Care. Some service managers and staff indicated they were concerned about inequity of provision of service between CC and clients outside the trial. This is discussed in more detail in Section 5.2.

For GP service providers, the global effect in the Intervention area was a reduction in GP consultations whether GPs had patients who were trial clients or not (Tables A4.12 and A4.13, Appendix 4). The reason for this change, and whether it was related to Linked Care, was unclear. Changes in rates of ordering imaging and tests did not appear to be associated with Linked Care (Table A4.14) although the data did reveal some differences, both between the groups and over time.

⁴ CC interview.

In terms of service delivery processes, and in particular managing demand, Linked Care appeared to facilitate more rapid entry to services. Costs and charges did not appear to be a large issue for participants because co-payments were means tested or were set so low that they were unlikely to affect demand for services. In fact, contrary to the design of the Linked Care model, participants reported that their contributions to the cost of care decreased during the trial.

3.2 Impact on Care Coordination and Service Integration

The effectiveness of service delivery depends not only on processes within an organisation, but also on the strength of the links between agencies and service types. The concept of linkages are examined at three levels in the report:

- ? at a macro level, in working relationships between agencies;
- ? at an internal organisational level, through the use of multi-disciplinary teams and service types; and
- ? at a micro level, through care coordination or care planning for individual clients.

This section discusses service providers experiences of the influence of Linked Care on service delivery practices relating to care coordination and service integration. The experiences of service providers specifically in relation to the organisation and processes of the Linked Care model of care coordination are explored more fully in Section 4.3.

3.2 a Service Personnel Questionnaires

The end of trial Service Staff and Volunteer Questionnaire was distributed in November 1999 to obtain information on service providers' experience of the influence of Linked Care on service delivery practices relating to care coordination and service integration. The baseline questionnaire was distributed in May 1998. Table 3.19 shows the response rate of service staff and volunteers to the end of trial questionnaire.

Table 3.19: Response Rate to Service Staff and Volunteer Questionnaire November 1999

Service Provider	Total Staff	Nos. of Care Coordinators	Sample	Response	Response Rate %
GPs ^(a)	30	30	30	29	97
Northern Sydney Home Nursing Service	46	5	25	15	60
Hornsby Hospital Rehabilitation and Aged Care	24	5	24	11	46
Mercy Family Centre	186	7	20	17	85
Home Care Service	200	2	20	4	20
Meals on Wheels	299	0	5	0	0
Wesley Gardens ^(b)	-	1	1	1	100
Neighbour Aid	77	0	5	0	0
Total	862	50	130	77	51^(c)

Notes: (a) The number of GP CCs ranged from 82 trained as CC in 1997, 41 were active CCs at December 1998, and 30 were active CC at December 1999. More than 30 GP may have considered themselves CC when the questionnaire was distributed in December 1999.

(b) Only one staff member was trained and is active as a CC, other staff member numbers are not known.

(c) Average per cent

The results of a comparison of the baseline and end of trial questionnaires are summarised in Appendix 5. The results that are statistically significant are discussed below.

Table 3.20: Service Personnel Views of Service Integration, 1998 and 1999: Knowledge of Assistance Provided by Other Services

	1998		1999		
	n	%	n	%	
Knowledge of assistance provided by other services					
Excellent	23	51.1	21	28.0	**
Satisfactory	17	37.8	43	57.3	
Needs to be improved	5	11.1	11	14.7	

** p < 0.05

Analysis of the baseline questionnaire indicated that approximately half of those surveyed believed that their knowledge of assistance provided by other services in the area was ‘excellent’ (Table 3.20). By November 1999, as reported in the end of trial questionnaire, this had dropped to a little over a quarter. Conversely, at mid-trial 38 per cent of service personnel surveyed believed their knowledge of assistance provided by other services was ‘satisfactory’ whereas by the end of the trial this had increased to over half those surveyed. There was little change in the proportion of those who believed their knowledge needed to be improved between baseline and end of trial.

Table 3.21: Service Personnel Views of Service Integration, 1998 and 1999: Referral Process to Community Services

	1998		1999		
	n	%	n	%	
Referral process to community services					
Excellent	17	40.5	18	24.0	*
Satisfactory	20	47.6	51	68.0	
Needs to be improved	5	11.9	6	8.0	

* p < 0.10

A similar pattern of change to that noted for service providers’ knowledge of assistance provided by other services can be noted for service’s referral process to community services, although in this case the changes are less pronounced. At baseline 40 per cent of those surveyed indicated that their referral process to community services was ‘excellent’ (Table 3.21). By November 1999, this had dropped to a quarter. At baseline 48 per cent of service providers surveyed believed their referral process to community services was ‘satisfactory’ whereas by end of trial this had increased to 68 per cent of those surveyed. There was less change in the proportion of those who believed their referral process needed to be improved between baseline and end of trial.

Table 3.22: Service Personnel Views of Service Integration, 1998 and 1999: Referral Process to other Health and Hospital Services

	1998		1999		
	n	%	n	%	
Referral process to other health and hospital services					
Excellent	19	46.3	20	26.7	*

Satisfactory	18	43.9	49	65.3
Needs to be improved	4	9.8	6	8.0

* p < 0.10

Once again, a similar pattern of change is noted to those above. At baseline 46 per cent of those surveyed indicated that their referral process to other health and hospital services was 'excellent' (Table 3.22). By November 1999, this had dropped to 27 per cent. At baseline 44 per cent of service personnel surveyed believed their referral process to health and other hospital services was 'satisfactory' whereas by end of trial this had increased to 65 per cent of those surveyed. There was little change in the proportion of those who believed their referral process to other health and hospital services needed to be improved between baseline and end of trial.

Table 3.23: Service Personnel Views of Service Integration, 1998 and 1999: Description of Care Provided to Clients

	1998		1999		
	n	%	n	%	
Description of care provided to clients					
Staff work closely together most of time	21	46.7	29	39.7	**
Staff work closely together occasionally	13	28.9	38	52.1	
Staff know little about each other's work	11	24.4	6	8.2	

** p < 0.05

A slightly different pattern of change is noted for service personnel responses to the question 'Which statement best describes how you see the care provided to individual clients to whom you are responsible' (Table 3.23). At baseline 46 per cent of those surveyed indicated that 'staff from different services worked closely together most of the time'. By the end of the trial, this had dropped somewhat to 40 per cent. At baseline 29 per cent of service providers surveyed believed 'staff from different services worked closely together occasionally' whereas by the end of the trial this had increased to a little over half those surveyed.

This pattern of change is similar to those noted above. However, at baseline a quarter of those surveyed indicated that 'staff from different services know little about each other's work' whereas by the end of the trial this had dropped markedly to 8 per cent. This is a different pattern from previous questions in which the proportion of those responding to 'know little/ needs improving' options did not change markedly over time.

Although not statistically significant, a similar although much less pronounced pattern of response to that described above is observable across the questionnaires for several other questions (e.g. communication between services, referral process from community services, referral process from GPs, Client's involvement in choosing level of care provided).

Against the trend, a greater proportion of service personnel rated referral process to GPs as 'excellent' at the end of the trial (27 per cent) than baseline (17 per cent), with fewer rating it needing improvement at the end of the trial (7 per cent) than baseline (19 per cent). These responses were not statistically significant however.

Overall, fewer service personnel rated their knowledge of and referral to services as ‘excellent’ from baseline to end of trial while more rated their knowledge of and referral to services as ‘satisfactory’. However, the proportion of those that thought their knowledge/referral processes needed improving on the whole did not change.

One possible explanation for these changes is that service integration had in fact worsened by the end of the trial, perhaps as a result of changes in the wider context of health and community services (as the HACC data in the previous section illustrated) than Linked Care specifically.

However, given that the shift in perception was from ‘excellent’ knowledge/referral processes to ‘satisfactory’, and that the proportion of those responding that knowledge and referral processes needed to be improved did not change over the trial period, a more likely explanation is that service personnel were responding to questions about service integration in two different contexts, baseline and end of trial. Baseline questions about service integration were asked at the beginning of the trial when service personnel would have limited knowledge, information or experience of Linked Care. Questions about service integration in this context would tend to draw out responses based on the hopes and aspirations service personnel had for Linked Care. The same questions asked at the end of the trial would be much more likely to draw out responses based on service personnel’s knowledge and experience of Linked Care. Service personnel may well have had a better grasp of (and hence could judge more accurately) the extent of information sharing and service integration in and between their and other services than they did at the beginning of the trial.

A comparison between CCs (GP and agency staff) and other service personnel was also made using the service staff and volunteer baseline and end of trial questionnaires. The results are summarised in Appendix 6. The results that were statistically significant are discussed below.

Table 3.24: Service Personnel Views of Service Integration, 1998 and 1999: Responses of Care Coordinators and Other Staff - Knowledge of Assistance Provided by Other Services

	Care Coordinators			Other Staff	
	Non-GP	Non-GP	GP	1998	1999
	1998	1999	1999	1998	1999
	% (n=24)	% (n=17)	% (n=29)	% (n=20)	% (n=26)
Knowledge of assistance provided by other services					
Excellent	62.5	52.9	17.9**	33.3	26.9
Satisfactory	37.5	47.1	64.3	44.4	50.0
Needs to be improved	0.0	0.0	17.9	22.2	23.1

** p < 0.05

There was a marked difference between non-GP CCs who rated their knowledge of assistance provided by other services as ‘excellent’ at end of trial (53 per cent) and GP CCs at end of the trial (18 per cent; Table 3.24). Similarly there was a difference between non-GP CCs who rated their knowledge of assistance provided by other services as ‘satisfactory’ at end of trial (47 per cent) and GP CCs at end of trial (64 per cent). Non-GP

CCs did not think their knowledge needed improving at the end of the trial (0 per cent) but 18 per cent of GP CCs thought their knowledge did need improving by the end of the trial.⁵ There was no corresponding significant change in the responses of staff who were not CCs.

Table 3.25: Service Personnel Views of Service Integration, 1998 and 1999: Responses of Care Coordinators and Other Staff - Sharing of Information

	Care Coordinators			Other Staff	
	Non-GP	Non-GP	GP	1998	1999
	1998	1999	1999		
% (n=24)	% (n=17)	% (n=29)	% (n=20)	% (n=26)	
Sharing of information within my area					
Excellent	25.0	35.3	7.1 *	17.6	30.8
Satisfactory	58.3	52.9	78.6	29.4	26.9
Needs to be improved	16.7	11.8	14.3	52.9	42.3

* p < 0.10

As with the previous question, there was a difference between the proportion of non-GP CCs who rated their service's sharing of information as 'excellent' (35 per cent) to GP CCs (7 per cent), and also a difference in the proportion of non-GP CCs who rated their information sharing as 'satisfactory' (53 per cent) to GP CCs (79 per cent; Table 3.25). There was no corresponding significant change in the responses of staff who were not CCs.

Table 3.26: Service Personnel Views of Service Integration, 1998 and 1999: Responses of Care Coordinators and Other Staff - Referral Process to Community Services

	Care Coordinators			Other Staff	
	Non-GP	Non-GP	GP	1998	1999
	1998	1999	1999		
% (n=24)	% (n=17)	% (n=29)	% (n=20)	% (n=26)	
Referral process to community services					
Excellent	50.0	41.2	3.6***	33.3	38.5
Satisfactory	45.8	52.9	85.7	40.0	53.8
Needs to be improved	4.2	5.9	10.7	26.7	7.7

*** p < 0.01

A similar pattern to those for the previous questions emerges. The proportion of GP CCs rating the referral process to community services as 'excellent' was considerable lower than that of non-GP CCs at end of trial (Table 3.26). The proportion of GP CCs rating the referral process as 'satisfactory' was higher than non-GP CCs at the end of the trial.

Table 3.27: Service Personnel Views of Service Integration, 1998 and 1999: Responses of Care Coordinators and Other Staff - Referral Process to GPs

	Care Coordinators			Other Staff	
	Non-GP	Non-GP	GP		

⁵ Collectively, these changes in response were significant to the 0.05 level.

	1998 % (n=24)	1999 % (n=17)	1999 % (n=29)	1998 % (n=20)	1999 % (n=26)
Referral process to GPs					
Excellent	19.0	21.4	23.5	16.7	36.0 **
Satisfactory	71.4	78.6	64.7	50.0	60.0
Needs to be improved	9.5	0.0	11.8	33.3	4.0

** p < 0.05

Encouragingly, this result illustrates that more non-CC staff rated the referral process to GPs as ‘excellent’ or ‘satisfactory’ at the end of the trial, compared to the beginning. Fewer rated the process as needing to be improved by the end of the trial (Table 3.27).

Table 3.28: Service Personnel Views of Service Integration, 1998 and 1999: Responses of Care Coordinators and Other Staff - Referral Process to Other Services

	Care Coordinators			Other Staff	
	Non-GP 1998 % (n=24)	Non-GP 1999 % (n=17)	GP 1999 % (n=29)	1998 % (n=20)	1999 % (n=26)
	Referral process to other health and hospital services				
Excellent	56.5	29.4 *	21.4	25.0	34.6
Satisfactory	43.5	70.6	71.4	50.0	57.7
Needs to be improved	0.0	0.0	7.1	25.0	7.7

* p < 0.10

Fewer non-GP CCs rated the referral process to other health and hospital services as ‘excellent’ at the end of the trial compared to baseline, with more rating this type of referral as satisfactory (Table 3.28). This result is interesting because it illustrates that this pattern of change is not restricted to GPs alone, at least for referral processes to other health and hospital services.

Table 3.29: Service Personnel Views of Service Integration, 1998 and 1999: Responses of Care Coordinators and Other Staff - Referral Process from Community Services

	Care Coordinators			Other Staff	
	Non-GP 1998 % (n=24)	Non-GP 1999 % (n=17)	GP 1999 % (n=29)	1998 % (n=20)	1999 % (n=26)
	Referral process FROM community services				
Excellent	29.2	23.5	7.7 *	13.3	7.7
Satisfactory	58.3	70.6	57.7	60.0	69.2
Needs to be improved	12.5	5.9	34.6	26.7	23.1

* p < 0.10

This result illustrates that GP CCs rated referral processes from community services as poor compared to non-GP CCs. Unlike previous questions, fewer GP CCs rated the referral process as satisfactory, and a larger proportion rated the referral process as needing to be improved. A similar result was also noted in the GP baseline and end of trial questionnaires.

GPs reported difficulties in referring patients to, or communicating with, community services (baseline 32 per cent / end of trial 31 per cent; Table 3.29). However, the differences between the two GP questionnaires were not statistically significant.

Table 3.30: Service Personnel Views of Service Integration, 1998 and 1999: Responses of Care Coordinators and Other Staff - Clients' Initial Access to Services

	Care Coordinators			Other Staff	
	Non-GP	Non-GP	GP	1998	1999
	1998	1999	1999		
% (n=24)	% (n=17)	% (n=29)	% (n=20)	% (n=26)	
Clients' initial access to services					
Excellent	25.0	17.6	10.7 *	5.6	19.2
Satisfactory	45.8	35.3	67.9	50.0	42.3
Needs to be improved	29.2	47.1	21.4	44.4	38.5

* p < 0.10

Fewer GP CCs rated clients' initial access to services as 'excellent' compared to non-GP CCs, and more rated initial access as 'satisfactory' at the end of the trial. Unlike previous questions that have shown this pattern of change, more non-GP CCs rated clients' initial access to services as needing to be improved at the end of the trial than GP CCs (Table 3.30). The reasons for this are not clear, but perhaps again show that the cautious approach towards the effects of Linked Care at the end of the trial was not restricted to one group or type of CC.

Table 3.31: Service Personnel Views of Service Integration, 1998 and 1999: Responses of Care Coordinators and Other Staff – Description of Care Provided to Clients

	Care Coordinators			Other Staff	
	Non-GP	Non-GP	GP	1998	1999
	1998	1999	1999		
% (n=24)	% (n=17)	% (n=29)	% (n=20)	% (n=26)	
Description of care provided to clients					
Staff work closely together most of time	69.6	64.7	30.8 *	16.7	34.6 *
Staff work closely together occasionally	17.4	29.4	61.5	44.4	53.8
Staff know little about each other's work	13.0	5.9	7.7	38.9	11.5

* p < 0.10

Perhaps one of the most important questions concerning internal service integration has given a mixed result. While a similar pattern of change to those noted above concerning the differences between non-GP CCs and GP CCs is again significant, a more encouraging response is recorded for non-care coordinating staff. A higher proportion of non-CC staff rated their organisation's internal integration as 'excellent' or 'satisfactory' at end of trial compared to baseline, and fewer rated their organisation's internal integration as needing to be improved.

While these comparisons show that the differences noted between the 1998 and 1999 questionnaires of service staff and volunteers (as discussed previously) may in part be due to the attitudes and views of GP CCs, similar differences are also apparent for non-GP CCs from these comparisons. In one instance, that of referral process to other health and hospital services, this similar pattern of change is statistically significant. While not statistically significant, similar but less pronounced patterns of change are observable for some other

responses of GP CCs and non-GP CCs. As was previously noted, one possible explanation for this is that service integration had in fact worsened by the end of the trial, perhaps as a result of changes in the wider context of health and community services. As was also previously noted, a more likely explanation is that service personnel were responding to questions about service integration in two different contexts, baseline and end of trial, and that this caused these different responses.

The end of trial responses of non-care coordinating staff are more encouraging for Linked Care. While only those responses pertaining to the referral process to GPs were significant (see above), some other questions showed a similar pattern of positive change over the course of the trial (e.g. referral process to community services, to other health and hospital services).

3.2 b Care Coordination

Existing Care Coordination

All the health and community service providers, including most GPs, said they coordinated the care needs of their clients. This ranged from informal coordination when a client approached them to provide advice and make referrals, to formal care coordination through funded packages such as COPs and CACPs. GPs tended to emphasise coordination of clinical needs.

If this is what had evolved in the sector, it could be that it was a realistic limitation on a working care coordination model: the professional expertise of the CC might determine which parts of a participant's care were most successfully integrated.

It appeared that the distribution of limited resources to clients was moderated on an individual service provider level through referrals to other service providers. While clients could potentially enter at any part of the health and community service sectors, they relied on a series of referrals to become aware of other services. Managers reported that most clients got some service and the most urgent needs were met.

This organic nature of access and service allocation was dependent on the autonomous decision making of service providers fortuitously meeting at least the critical needs of most clients. It represented a basic level of coordination in terms of information sharing through referral and sector meetings. Some service delivery benefited from additional client-focused management, such as packaged care, case management or discharge planning. Other clients though struggled without adequate assistance until a crisis, only then presenting in the health care sector.

The cost advantage of the service delivery process was that it had a minimal infrastructure cost, because service providers needed to manage only their own budget, staff and client base.

In the interviews, service providers discussed the issues surrounding interrelationships between service types and between service providers. They extolled the benefits of working with different professionals within the one organisation, and of having cooperative relationships with other complementary and similar health and community service providers.

They also used the language of care coordination in a very broad sense to include at various times three ways of linking services. The analysis tried to divide the types of interrelationships into three levels to more fully understand the comparison to Linked Care goals and the position of service interrelationships at this baseline position in Linked Care area.

A notable aspect of the descriptions of care coordination in its various forms was the limited extent of integration between health and community service sectors. The focus was on either community services, perhaps incorporating referrals to medical services; or coordinated medical needs, sometimes also referring to community services.⁶ For example, almost all GPs reported that their patients saw them as coordinating their clinical care and only a smaller majority reported they were seen as coordinating their patients' community care. This was consistent throughout the trial, as a comparison of the baseline and end of trial GP questionnaire demonstrates. Almost all GPs thought that their patients saw them as coordinating their clinical care (baseline 83 per cent/ end of trial 81 per cent), but significantly fewer thought this applied to community care (49 per cent / 45 per cent).

Linked Care

At the baseline most providers saw Linked Care as an opportunity to formalise and improve on these existing types of care coordination. They hoped it would improve outcomes for clients and relieve providers of the unpaid, time-consuming task of coordination. They proposed that incremental improvement of the existing system by Linked Care could be achieved through: more thoroughly arranging care delivery provided by other agencies; being a single point of contact; and preventing wasted service use.

They also had reservations about how fully the model could be implemented. The first risk to the success of Linked Care was that the overlay of a formal care coordination model on existing coordination mechanisms might incur higher costs than benefits. Paid care coordination might displace coordination previously undertaken by the clients themselves, their families and caregivers, and by their service providers.

The second risk identified by some community service managers and GPs was that the Linked Care model could have been an overly complex method of linking multiple agencies and care. They were hopeful that Linked Care procedures would become more flexible as CCs became more familiar with them. The reporting requirements of Linked Care were possibly more complex than if the care coordination were a permanent change in the process of service delivery. Even so, Linked Care may have needed to consider refining the model to maintain flexibility, facilitate prompt responses to changed care needs, and minimise recording processes.

All managers who were interviewed emphasised that, in their opinion, the success of Linked Care was dependent on the quality of the CCs. Managers identified two possible limitations to the quality of the CCs: coordinators' knowledge of the range of care; and their commitment of time to the process of consultation.

⁶ Similar results were found in a baseline questionnaire to staff and volunteers of the key service providers to canvass their views on existing care coordination and referral (May 1998).

The HACC agency managers, such as those from the MFC and HCS, expressed reservations about what they perceived as an emphasis on medical health in this trial, instead of a more inclusive quality of life model. They feared that if the model was not changed, the benefits of existing service delivery strategies used by community care agencies could become lost in the intervention.

At the start of the Live Phase, service providers appeared supportive of Linked Care's model of care coordination developing out of the current coordination processes, rather than imposing a new regime. They issued cautions about the need to minimise financial cost and bureaucracy, and the need for training and guidance to ensure informed performance from CCs cognisant of accessing care from the full breadth of available health and community services.

The mid-trial GP focus group found that some GPs reported that Linked Care had increased the role of the GP as CC and advocate for the patient. Some found it difficult to get to talk to non-GP CCs and to other services, resulting in a lot of time spent on the telephone. Some non-CC GPs reported little impact other than being expected to complete forms. Most GPs reported some improved communication and referral with other services. However there was now some duplication of communication required around referral (e.g. to the CC and to the service being referred to). Some non-CC GPs felt 'out of the loop', being asked to provide information but not being informed of the outcomes.

3.2 c Service Integration

Existing Integration

Links with other providers, such as telephone referrals, were reasonably effective according to many of the service providers interviewed. They surmised that Linked Care may have the effect of further improving these links because it provided an opportunity for greater contact, including the potential gain of increasing GP involvement in the community sector. A number of HACC services feared that there may be a risk of Linked Care being divisive by creating competition between services that, before Linked Care, worked collaboratively.

The managers' description of their constructive relationships and predilection for increased cooperation was a positive base from which to achieve the goals of Linked Care. Whether they will stay positive in the growing climate of increased competition for resources, less security of funding and more accountability remains to be seen.

Integration Experiences in Linked Care

At the baseline service provider managers were positive about their expectations of the impact of Linked Care on links between agencies. Linked Care offered an opportunity for more contact between the service providers, including GPs. Both health and community service interviewees said that links between service providers strengthened through the establishment period. The managers reported that existing relationships between the providers were enhanced by constant contact in Linked Care and it was an opportunity to establish relationships with other providers.

The mid-trial GP focus group found that GPs felt that Linked Care had improved some of their patients' access to services and their own awareness of other services. It had also improved awareness of and referral to GPs. Comments made by non-GP service personnel (both CCs and non-CCs) also support this view. When asked at the end of the trial what they thought the Linked Care trial achieved some service personnel made comments regarding improved integration. Some of these remarks were general comments about external integration such as 'improved networking in area' or 'the Linked Care trial has improved the cooperation and communication between the various services.' Other comments were more specific and described improvements in particular sectors, for example 'improved community service networks' or 'greater knowledge of the interaction of services available from community services for the general practitioner' (this comment was not made by a GP). However, at the end of the trial two service personnel made comments that external service integration was not adequate.

At the end of the trial some service personnel were of the view that Linked Care had not significantly changed their service's internal integration. In response to the question 'Is there anything else you would like to comment on about your service delivery or the Linked Care trial' some service personnel remarked that 'our service is well coordinated', 'we have a well coordinated service and work well together with plenty of communication' and 'service delivery from our own program remained unchanged, except the increase in paperwork.' The part of this comment referring to increased amounts of paperwork as a result of Linked Care was repeated many times throughout the trial by GPs, CCs, service managers and service personnel alike.

3.2 d Issues and Results

Qualitative and quantitative data have given a picture of some ambivalence concerning internal and external service integration. Overall, fewer service personnel rated their or other service's integration as excellent at the end of the trial compared to the beginning, while more rated their or other service's integration as satisfactory. Comments made by service personnel were also somewhat mixed, some remarking their service was already integrated before Linked Care, others commenting that certain aspects of their or other service's integration had improved, and others again commenting that service integration had worsened for their and other services by the end of the trial.

One possible explanation for this is that service integration had in fact worsened by the end of the trial, perhaps as a result of changes in the wider context of health and community services. A more likely explanation is that service personnel were responding to questions about service integration in two different contexts, baseline and end of trial, and that this caused these different responses.

The end of trial responses of non-care coordinating staff are more encouraging for Linked Care. While only those responses pertaining to the referral process to GPs were significant (see above), some other questions showed a similar pattern of positive change over the course of the trial (e.g. referral process to community services, to other health and hospital services).

A notable aspect of the descriptions of care coordination in its various forms was the limited extent of integration between health and community service sectors. They focused on either

community services, perhaps incorporating referrals to medical services; or they coordinated medical needs, sometimes referring also to community services.⁷ For example, almost all GPs reported that their patients saw them as coordinating their clinical care and only a smaller majority reported they were seen as coordinating their patients' community care. This was consistent throughout the trial as a comparison of the baseline and end of trial GP questionnaire demonstrates. Almost all GPs thought that their patients saw them as coordinating their clinical care (baseline 83 per cent/ end of trial 81 per cent), but significantly fewer thought this applied to community care (49 per cent / 45 per cent).

3.3 Conclusion

This section has examined the lasting impact of participation in Linked Care on the availability of services and the process and integration of service delivery. When read in conjunction with the *Whole of System Report*, it is clear that the influence of the many other significant changes in the sector may have been larger than the impact of participating in Linked Care. Nevertheless, participation provided an opportunity for service provider managers, staff and volunteers to meet with a common goal and discuss issues such as whether their service delivery processes needed reform and how integration could assist to improve outcomes for clients.

While there were some noted increases in use of hospital and community services, and expansion in some community services in the Intervention area, but it would appear that these increases were due to wider changes in the health and community services sector and not a result of Linked Care. However, on closer examination of the data collected by the evaluators, an increase in the number of people receiving personal care services in the Intervention area (with no corresponding increase in the Control area over the trial period) would appear to be associated with the activities of Linked Care.

In terms of service delivery processes, and in particular managing demand, Linked Care appeared to facilitate more rapid entry to services. Concerning costs and charges it appeared that under the baseline charging processes affordability was not an issue for clients because co-payments were means tested or were set so low that they were unlikely to affect demand for services. In the context of Linked Care, the expectations of participants for cost contribution may be shaped by their prior contact with service providers' charging mechanisms.

Qualitative and quantitative data have given a picture of some ambivalence concerning internal and external service integration. Overall, fewer service personnel rated their or other service's integration as excellent at the end of the trial compared to the beginning, while more rated their or other service's integration as satisfactory.

The end of trial responses of non-care coordinating staff are more encouraging for Linked Care. While only those responses pertaining to the referral process to GPs were significant, responses to other questions showed a similar pattern of positive change over the course of the trial.

⁷ Similar results were found in a baseline questionnaire to staff and volunteers of the key service providers to canvass their views on existing care coordination and referral (May 1998).

A notable aspect of the descriptions of care coordination in its various forms was the limited extent of integration between health and community service sectors. CCs focused on either community services, perhaps incorporating referrals to medical services; or they coordinated medical needs, sometimes referring also to community services.

4. Service Provider Experiences of Organisation of the Coordinated Care Trial

This chapter describes the service providers' experience of the organisational aspects of Linked Care. Although delays were experienced implementing Linked Care, as the chapter reveals, establishing an intervention in the context of a rapidly changing health and community service sector was a delicate process. Not only did Linked Care design the care coordination and fund pool mechanisms, but it also managed to develop successful relationships with the many partners to the process. Linked Care proposals underestimated the extent of effort required to establish new financial and administrative systems.

The chapter describes first, the management structure established to operate Linked Care. The financial management systems are then outlined, including discussion of the progress made toward refining the fund pool and implementing links between fund pooling and care coordination (Section 4.2). The evolution of the care coordination processes, including the characteristics of the CCs, the care planning and the innovative PSG structure is then explained (Section 4.3). The chapter concludes with a summary of the implications of the organisational issues for Linked Care.

4.1 Management and Governance Arrangements

4.1 a Management Structure

Linked Care was sponsored by the Northern Sydney Area Health Service (NSAHS). Linked Care was managed by the Linked Care organisation, headed by its Director, who was responsible to a Management Committee. The Management Committee included representatives from the sponsor, the fund pool contributors, consumer representatives, the Division of General Practice and a HACC representative, with an independent chairperson. Under the legal structure of the NSAHS, the Management Committee was responsible for decisions about the policy and financial arrangements in Linked Care. It operated similarly to a board of a medium size organisation. The Advisory Consortium was formed to advise on the establishment of the trial, but did not sit after this initial Establishment Phase as it duplicated the function of the Management Committee.

Working parties reported to the Management Committee on a monthly basis. The same organisations as sat on the Management Committee were represented in the working parties. The working parties were the main means for Linked Care management to consult with stakeholders. At the start of the Live Phase there were six working parties. Three continued to operate: the Evaluation Working Party, the Quality and Complaints Working Party and the Finance Sub-Committee. The other three working parties (Care Coordination, Information Technology, and Professional and Industrial Issues) did not sit during the Live

Phase, because the decisions about the establishment tasks for which they were formed were complete.⁸

The major service providers involved in Linked Care were the fund pool contributors, the agencies to which care coordination was subcontracted and a number of other agencies that provided services to the clients. Most of these supplied service usage data and were represented on Linked Care's management working parties.

Service providers appeared to differ in their degree of participation on working parties, perhaps due to their reaction to the consultations during the Establishment Phase. The NSAHS for example, appeared to dominate the Finance Sub-Committee, compared to say HACC funded services which frequently did not attend that sub-committee. The Quality and Complaints Working Party in contrast appeared to be attended by local representatives of GPs, ACAT, HKHCHS and HACC agencies. The consumer representatives, who also sat on the working parties, made the observation that at times there appeared to be a conflict of interest between the agencies' representation of their organisations and their role in contributing to the management of Linked Care.⁹

During the Establishment Phase and early Live Phase, some tension was generated by the complexity of the decision making processes between the many groups, trial management and bilateral arrangements between Linked Care management and service providers. As Linked Care moved further into its Live Phase this tension appeared to dissipate somewhat.

4.1 b Trial Relations with Service Providers

Striking a balance between appropriate consultation and meeting externally imposed timeframes and constraints on the design of the intervention was one of the major challenges for Linked Care management. The service providers expressed admiration for the achievements of Linked Care management, and at the same time, their frustration at the compromises imposed by the pace of change expected of Linked Care.

The Service Managers agreed that during the Establishment Phase Linked Care had taken care to involve their organisations in extensive consultation, through committees and working parties, meetings at agencies and meetings with advisory consultants. The agencies realised the complexity of Linked Care required directed final decisions at times. In retrospect both service providers and Linked Care staff questioned whether at times decisions could have been made earlier during the Establishment Phase.

By the start of the Live Phase service providers appeared to have moved to a more philosophical state reluctantly acknowledging the reasons for rapid, less consensual and unfamiliar decision making.

The individual local service managers were important to the success of Linked Care because of their critical role in the establishment and operation of care coordination, the fund pool and other management processes. For these reasons their personal knowledge of, and

⁸ The Care Coordination Working Party was reconvened in the last quarter of the trial to consider design of the care coordination process for the next stage of Linked Care.

⁹ Consumer representatives end of trial questionnaire, November 1999.

commitment to, Linked Care was important. Unfortunately many of the service providers restructured or their directors were replaced during the first year of Linked Care. This probably had an impact by delaying Linked Care processes and negotiations with providers.

Significant changes to the key agencies included:

- ? the senior executive of the NSAHS changed during the trial;
- ? the two branches of the HCS (one in the Intervention area and one in the Control area) amalgamated and the manager with the most involvement in Linked Care left the HCS;
- ? the board and senior management of the MFC changed twice, resulting in Linked Care negotiating with three different CEOs;
- ? NSHNS was restructured with a complete change in senior management, again resulting in Linked Care negotiating with three directors; and
- ? the director of the ACAT changed.

Changes such as these appear common within this dynamic sector and therefore need to be accounted for in any ongoing care coordination model.

To evaluate the service providers' involvement in organising and designing Linked Care both questionnaire and interview data were obtained from the major health and community service providers in the Hornsby Ku-ring-gai area, with some additional document collection. The evaluators also attended many of the working party and consultation meetings throughout the Live Phase.

In the process of consultation and decision making Linked Care staff were seen to be readily available and supportive. Through some self-examination by the service providers they also recognised how changes to internal communication might have improved the acceptance of Linked Care by service provider staff.

Service managers commented that participating in consultation required considerable commitment of staff and management resources to sit on the committees and working parties. No-one suggested they could have allocated more time as other service delivery obligations compete for that time. Also, as the ACAT managers summarised, if even more time was allocated, it would be unlikely that there would be significant difference in the outcomes.

They made suggestions from lessons learnt in the complex process of establishing Linked Care, including:

- ? initially spending more time explicitly presenting issues, agendas, fears and attitudes of all participating parties (including the sponsor and service providers), instead of talking around issues;
- ? putting decisions on paper early and moving on to pilot processes before a trial goes live to minimise modifications during the Live Phase; and
- ? documenting agreed policy statements and updated changes in a succinct form so that people can focus on the issues, without getting lost in the volumes of information and changes in expectations.

Some decisions about the design of Linked Care, including the timeframe and reporting requirements, were imposed externally by the CDHAC. The service providers reported that at times they resented the impact of these demands. They felt that with more time and willingness, more account could have been taken of their local working relationships and consensus decision making (with which they were more familiar).

Linked Care management noted that an advantage of subcontracting care coordination was that there was direct access with the subcontracting agencies to inform them about the progress of Linked Care. Linked Care staff observed that the attitude of service provider staff to Linked Care appeared to differ according to their position in the agency. Senior managers appreciated the strategic significance of contributing to Linked Care; CCs had opportunities to negotiate about the design of Linked Care; but middle managers were initially isolated from the decisions in Linked Care and therefore may have felt the greatest anxiety about the risks it presented. Once aware of this dynamic, Linked Care administration established alternative communication mechanisms, such as group meetings, with middle managers from multiple agencies, and direct training with field staff to inform them about the developments within the Linked Care model.¹⁰

At the end of the Establishment Phase and throughout the Live Phase, service providers appeared to have moved to a more philosophical state acknowledging the reasons for rapid, less consensual decision making than they were familiar with. In addition, they proposed a number of suggestions for effective communication during the remainder of Linked Care.

No major conflicts arose over the life of the trial and all contributors remained in the fund pool and represented on the management working parties. However, the organisational achievement of implementing a complex trial in such a short timeframe predictably caused some casualties. Although understanding the need for rapid implementation, some service providers' were frustrated early in Linked Care at the limited opportunities for their concerns to be adequately addressed.

By the time of the mid-trial strategic planning workshop service providers appeared to have embraced the collaborative opportunities of Linked Care. The credibility of Linked Care had been evidenced by having established a working model of care coordination and fund pooling.

Perhaps the least reassured was the Division of General Practice, which continued to approach the development of initiatives proposed for the second half of the Linked Care period with caution. Linked Care continued to participate in monthly meetings of representative GPs from the Division to address these concerns. GP representatives on committees also appeared to have difficulty reconciling their representative role with the looser Division structure. For example, feedback to the Division from monthly Linked Care committee meetings seemed to be ad hoc. The participating GPs expressed frustration, perhaps borne from lack of familiarity with reporting through a bureaucratic system of management and administration.

¹⁰ Linked Care staff mid-trial focus group.

The picture of service provision from this investigation was one of readiness for experimentation with the formal principles of a care coordination model as offered by Linked Care.

4.1 c Issues and Results

The expectations of service provider management in the Hornsby Ku-ring-gai area at the beginning of the Live Phase of the trial were supportive of the opportunities Linked Care presented, if somewhat cautious about Linked Care's ability to achieve its goals.

Although delays were experienced implementing Linked Care, establishing an intervention in the context of a rapidly changing health and community service sector was a delicate process. Not only did Linked Care design the care coordination and fund pool mechanisms, but it also managed to develop successful relationships with the many partners to the process. Linked Care proposals underestimated the extent of effort required to establish new financial and administrative systems.

Linked Care adopted a model of inclusion as illustrated by its complex working party structure, yet it also managed to basically adhere to a strict and perhaps unrealistic timeframe set by the Commonwealth. The achievement of establishing Linked Care infrastructure while managing of the tension created by these two conflicting goals needs to be acknowledged. The very design of Linked Care relied on securing and maintaining the organisational and strategic commitment of the service providers.

4.2 Finance and the Fund Pool

4.2 a Financial Structure

When Linked Care was conceived there was no clear template from which to establish financial arrangements between its multiple partners. It was an ambitious goal to manage contributions from ten funding partners, including two private health insurers. It required balancing the financial demands of Linked Care with possible fundamental financial risk to the contributing agencies.

Linked Care management established a financial management system with two separate operating accounts: the fund pool and an infrastructure budget. Funds for the first account were contributed by the fund pool partner services, and funds for the second were paid in advance by the CDHAC to cover the cost of organising Linked Care. Cost centre accounting applied to both accounts and interest was attracted to the accounts, calculated daily.

The *Local Evaluation Final Report* more fully explains the fund pool process and outcomes. This section provides an analysis of the service provider experience in relation to financial management of Linked Care.

4.2 b Fund Pool Development

There were three main groups of fund pool contributors: the Commonwealth; the sponsor, the NSAHS; and HACC service providers. In addition, two private health insurers, HCF and MBF also agreed to be contributors after the start of the Live Phase.¹¹ Table 4.1 lists the contribution rates for each of the contributors, as originally estimated in 1997 and progressively revised in 1998 and 1999.

Each service provider paid into the fund pool a contribution based on a capitation rate derived from clients' projected service use and agreed service costs. The proposed method of calculating the fund pool was to collect from each contributor tracking data of past care used by clients recruited to Linked Care, extrapolate from that data expected service use for the period of the trial and negotiate a cost per unit of care (HKCC, 1997). Further revisions of the fund pool were to be based on usage and cost comparisons with the Control group.

The process of establishing contribution rates for the fund pool was slow and far more approximate than anticipated by the Commonwealth or Linked Care. It took three years for each contributor to complete the fund pool establishment tasks from the point of considering involvement through to revising the contribution rates. The delay was probably due first, to the quality of data available, both in terms of measuring the frequency of care use and the costs of service types. Second, it was due to the considerable time required for possible contributing agencies to digest options and agree to risk their financial viability by

¹¹ The service providers involved in the trial included the fund pool contributors. Some also provided subcontracted care coordination and services to the participants. Other service providers supplied care to the trial participants but were not fund pool contributors. Usual funding and payment arrangements operated for these agencies, rather than payment out of the fund pool.

participating in Linked Care. The agreed contribution rates could probably best be described as resulting from negotiation rather than scientific exactitude.

Table 4.1: Fund Pool Contribution Rates by Contributor, November 1999

Contributor	Contribution per Intervention client per month (\$)	
	Initial	Revised
Contribution per client in Linked Care		
MBS	129	129
PBS	107	107
Inpatient care (NSAHS) ^(a)	117	263
Non-inpatient care (HKHCHS) ^(b)	15	15
Home Nursing	90	63
Home Care Service	102	128 ^(c)
Contribution per client of the contributor in Linked Care		
Mercy Family Centre	90	340
DVA	433	783
HCF	405	405
MBF	-	428

Notes: (a) Northern Sydney Area Health Service public hospital inpatient care for three participating hospitals.

(b) Hornsby Ku-ring-gai Hospital and Community Health Service non-inpatient care.

(c) The revision was incomplete. This revised contribution rate recommended by Linked Care was still under discussion.

Establishing the fund pool required negotiations with individual contributors and committee negotiations. Linked Care faced a number of challenges to negotiating costs and estimating contributions to the fund pool. They are briefly listed below.

- ? Some service providers did not have lists of services, costs or a management information system that easily allowed a cost to be attributed to services.
- ? Some service providers did not record service usage by clients.
- ? All services were concerned to protect their limited funding base and reduce the impact of the risk of their contributions being greater than the payments from the fund pool.
- ? Not all services were familiar with financial management decision making and did not have experts within their organisational structure to advise them. They were forced to rely on the more remote advice from Linked Care and the HACC forum.
- ? There were multiple options for calculating costs: marginal cost, actual cost, average cost or a proportion of one of these costs. Some options were more advantageous to one

party than another and some parties had more knowledge or negotiating power to dictate their preferred option. Agreements using different options were negotiated by the contributors.

In retrospect, it may have been more realistic to acknowledge that the services' management information systems could not expect to produce tracking data accurate enough to predict future use. Most services did not manage their finances on a unit cost basis, nor have alternative accurate service usage data on record. The second note of realism would have been to acknowledge that contributing agencies were not familiar with the methods and risks associated with fund pooling.

Simplified arrangements might have been sufficient. They might have included phasing in contributors over a number of years rather than attempting to begin with so many diverse agencies. Second, rather than undertaking the complex Tracking Phase that proved inaccurate at times, the original fund pool estimates could have been calculated in the manner of the DVA estimates. That is, establish an approximate figure to be verified and adjusted retrospectively during the first months of Linked Care and in comparison to the Control group.

Fund Pool Revision

Fund pool revisions were planned as part of the financial management to assess whether to amend fund pool capitation rates for each agency as listed in the Live Phase proposal, or as subsequently agreed upon. The national plan for the trials was that revisions would begin when recruitment finished and repeated at least 6-monthly throughout the trial period. The first revision of all capitation rates was due in the second half of 1998. However, the last capitation rate was not revised until November 1999.

The lengthy process of revision was probably due to the same reasons that the original contribution calculations were difficult. Service usage and cost data were unavailable or delayed and agencies were confused about the implications of deficits and surpluses from contributions to and payments from the fund pool experienced in the first half of the trial. The complexity of completing fund pool revisions should probably be taken into account in the design of a future fund pool.

Table 4.1 above shows that the revision of inpatient costs and DVA costs resulted in significantly higher contributions from them. This had the impact of increasing the contribution from these partners, compared to the HACC agency contributions which decreased, as described in Table 4.2. The financial significance of revising the fund pool contributions is illustrated in this table. It compares the difference in the proportion of fund pool contributions from each partner as estimated in the Live Phase proposal, based on number of clients and capitation rates for each agency, with the actual contributions from each partner to October 1999.

Table 4.2: Estimated and Actual Proportion of Fund Pool Contributions to October 1999

Contributor	Initial estimates September 1997 %	Actual contributions to October 1999 %
MBS	18	13.9
PBS	14	12.1
Inpatient care	16	31.0
Non-inpatient care	2	1.5
Home Nursing	12	9.6
Home Care Service	21	10.8
Mercy Family Centre	1	3.1
Department of Veterans' Affairs	9	16.6
HCF and MBF	7	0.9
Other	-	0.2
Fund pool size	\$12.5 million	\$10.7 million

Operation of the Fund Pool

To operationalise the fund pool, Linked Care administration billed agencies for contributions into the pool based on the Live Phase proposal contribution calculations. Costs were fixed at the negotiated price, except for HIC costs. Generally the costs were fixed at a cost per unit of service. The same agreed cost was used to calculate both the fund pool contribution and payment from the pool to the contributor for services used. The agreed contribution rate per active client was multiplied by the number of active clients.

It appears that once contribution rates were agreed, payments in and out of the fund pool were hampered by the continuing data collection and transfer problems. Linked Care and contributors appeared to act in good faith to provide contribution and invoicing data as promptly as it became available. Linked Care's information technology seemed to be able to respond flexibly to the variable quality in data to match invoices with services used by participants. Table 4.3 summarises the status of each of the contributors in relation to invoicing and revision of fund pool contributions.

Table 4.3: Fund Pool Contributors' Billing and Contribution Status

Contributor	Billing	Fund pool revision
HIC (MBS and PBS)	Automated system. Invoices from DHAC are reconciled against the HIC data.	No change after the revision.
HKHCHS ^(a) , Royal North Shore and Ryde Hospitals (NSAHS): Inpatient services	Automated billing process for inpatient services.	Revised to a higher contribution. 1999 revision has not occurred because of missing data. Exclusion of outliers has resulted in a surplus to the fund pool.
HKHCHS ^(a) : Outpatient	Manual processing.	The quality of the service usage data was too inaccurate to facilitate a revision.
Northern Sydney Home Nursing Service	Automated system.	Revised to a lower contribution
Home Care Service	Automated system.	Revised to a higher contribution
Department of Veterans' Affairs	Automated system.	Revised to a higher contribution.
Mercy Family Centre	Manual processing.	Revision to a higher contribution
HCF and MBF	Operational but service usage data were not transferred to Linked Care except in an aggregated form until after the trial.	Remained the same. Transfer of the balance from PHI pools into the main fund pool did not occur until after the trial.

Notes: (a) Hornsby Ku-ring-gai Hospital and Community Health Services

For most agencies contributions were greater than payments, except for the three HACC providers (Home Care Service, Northern Sydney Home Nursing Service and Mercy Family Service), as listed in Table 4.4.

Table 4.4: Balance of Fund Pool Contributions and Payments by Contributor, December 1999

Contributor	Balance \$
MBS	329871
PBS	810778
Inpatient care	42097
Non-inpatient care	0 ^(a)
Home Nursing	-7983
Home Care Service	-434268
Mercy Family Centre	-5634
Department of Veterans' Affairs	279589
HCF	71101
MBF	50563
Other (private providers)	-78719
Total	1436297

* Accurate tracking of service use and calculation of a non-inpatient capitation rate became too difficult for the hospital and trial to manage. They agreed to a zero balance of funds in and out of the pool.

Private Health Insurance

The private health insurer contributions were treated differently to other contributors. The HCF and MBF funds were not added to the Linked Care fund pool, but operated as separate pools held by the companies. It was intended that two transfers be made to the Linked Care fund pool: a contribution for care coordination and payments for any care substitution that prevented or shortened hospital stays. Pool balances were to be transferred to Linked Care at regular intervals. Their contributions were reviewed in the second half of the trial.

MBF and HCF did not transfer accurate service usage data to Linked Care until the end of the trial, except total financial figures. This caused delays in the planned data management system. Without unit level data, Linked Care was unable to verify the PHI summary analysis or make those transfers.

An example of the difficulty of managing the overlapping fund pools was when MBF decided not to pay for part of a wheelchair out of its fund pool; instead it was paid for out of the general fund pool. An MBF client needed an electric wheelchair partly to avoid hospital admissions. The client had wanted Linked Care to pay part of the costs. Linked Care tried to negotiate for the cost to come out of the MBF fund pool, but despite recent long inpatient admissions for the client, MBF declined.

4.2 c Financial Outcomes

Linked Care managed to operate both within the fund pool budget and the infrastructure budget. According to its calculations in the NSW Monitoring Group Reports, the fund pool ended with a surplus of \$1 302 919.¹² This included \$410 916 in prepaid revenue from the Commonwealth. This was an unreviewed prepayment by the Commonwealth to take account of the higher HIC costs before participant exit (the MBS and PBS capitation rate continued to be paid to Linked Care for 6 months after the exit of each participant).¹³ Given that there was a significant surplus in relation to the HIC contributions (\$1 140 649, the sum of MBS and PBS payments; Table 3.14) it seems unlikely that an additional payment was, in retrospect, necessary. This still left an impressive fund pool surplus of \$892 003.

The financial analysis by the evaluators in the remainder of this section examines the viability of Linked Care in relation to the fund pool and infrastructure grants. The results are summarised in Table 4.5 and are presented in full in Appendix 3 of the *Local Evaluation Final Report*.

¹² Fund pool income and expenditure were reconciled between the end of trial accounts and the Monitoring Group Report. There was a \$21599 difference in contribution income between the two, probably because of accruals.

¹³ This prepayment was not included in the financial analysis in Appendix 3 and Table 3.14.

Table 4.5: Financial Analysis, September 1997 to December 1999

	Full accounts	Ongoing full accounts less grants and start up, trial-related and wind up costs
Dollars		
Fund pool income	11004989	11004989
Infrastructure grant	3064590	
Other income	145385	145385
Total income	14214964	11150374
Service utilisation	-9590291	-9590291
Infrastructure expenses	-3910390	-1264736
Total costs	-13500681	-10855027
Income less costs	714283	294599

See Appendix 3 of the *Local Evaluation Final Report* for the detailed financial analysis tables.

Finances are divided into three components in the analysis in Appendix 3, *Local Evaluation Final Report*:

- ? the ongoing cost of operating care coordination and the fund pool (the last column in Table 4.5);
- ? start-up and wind-up costs of establishing and finishing the model; and
- ? costs of administering a trial, incurred only for evaluation purposes.

Costs are also divided between fixed and variable costs.

When the fund pool income and infrastructure grants are combined, the analysis confirms that Linked Care operated within budget, with a surplus of \$714 283 (Tables 4.5 and Final Report A3.1). This includes all start-up, trial and ongoing costs.

When start-up and trial costs and the infrastructure grant are removed leaving only ongoing costs to be supported by the fund pool itself, Linked Care still managed to operate with a surplus of \$294 599 (Table 4.5 and Final Report A3.2). That is, the fund pool was sufficiently broad to cover both service utilisation costs (88.3 per cent) and infrastructure costs (11.7 per cent).

However, these apparent surpluses do not take account of the accuracy of the calculation of the contributions to the fund pool. Discussion in Section 4.3 and Chapter 3 of this report about the limited opportunities for service reduction and substitution suggest that some of the large surplus after service payments (\$1 414 698) is probably attributable to overestimation of contribution capitation rates.

This is particularly likely since the service usage analysis in Chapter 6 does not reveal any significant decreases in service usage in the Intervention group compared to the Control

group. The only significant change was an increase in medical and specialist service use and cost. Even this change should be accepted with caution given the limitations in the data transfer from HIC (Chapter 6).

The accuracy of the service usage data would also affect the analysis of the financial outcomes. Linked Care did not capture all the data, despite its intensive efforts. The shortcomings with the data are described in Chapter 6 and also Section 4.2 d. The data are probably an underestimation of the full service use delivered by these providers to the Linked Care participants.

Further analysis of the relationship between the apparent financial outcomes and the service usage data is recommended, so that some of these concerns about the inconsistency between the fund pool surplus and the stable or increased service usage can be addressed.

These limitations aside (particularly with the income data), one significant outcome for Linked Care was that it was able to maintain ongoing infrastructure costs at under 12 per cent even in the initial two-year period (when establishment costs were high), under trial circumstances, with a small and reducing participant population. If the model was to be applied more widely, it could be assumed that with economies of scale and opportunities for developing the efficiency of the model, the infrastructure costs as a proportion of the fund pool could reduce further.

4.2 d Service Usage Data

Central to the financial management system of Linked Care was the collection and analysis of financial data. This included data relating to services used by the participants in Linked Care. Service usage data were used by Linked Care administration for three main functions. The were:

- ? financial management, such as estimating the size of the fund pool and confirming invoices from fund pool contributors;
- ? care planning, to inform CCs of gaps in the care plans and as a basis for making care substitution decisions; and
- ? to observe patterns of care used by the participants, to inform the design of intervention strategies and to assess the impact of the intervention.

Establishing the data management system to support Linked Care proved to be a difficult exercise. This was despite the considerable development effort by Linked Care management to address the limitations of the data system.

Data supplied by the fund pool contributors to establish an operational fund pool were a priority for Linked Care. Data concerning the services that drew most from the fund pool seemed to be adequately collected. This involved MBS, PBS, and inpatient services from the three major public hospitals, home care and home nursing services. Probably for this reason, other service usage data not critical to the fund pool management were given a lower priority or were not collected. Therefore, there could be significant gaps in the data collected, particularly that which relied on manual data collection.

Control participant data were not used to form or revise the fund pool and consequently, it was not a priority for Linked Care administration to collect these data. The use of a geographical control made data collection more difficult because organisations had to be approached that had no financial interest in Linked Care. As a consequence, the data were not adequate for revising some capitation rates (e.g. inpatient and non-inpatient costs).

Table 4.6 summarises Linked Care administration's methods of collecting service usage data in the Intervention and Control areas. It also identifies the limitations of the data collected. The collection methods were designed by Linked Care administration in conjunction with the service providers.

For further discussion of service usage data see also Chapter 6.

Table 4.6: Service Usage Data Collection by Linked Care Administration

	Data collection and transfer methods for the Intervention and Control areas	Comparison between Intervention and Control
MBS	Electronic transfer. Linked Care did not pay or collect gap fee data.	Same data set
PBS	Medicare number was to be with the usual pharmacist (PBS from other pharmacists may have been lost). Other medication data (non-PBS and client-paid) were not collected.	Same data set, but data capture may have been better in the Intervention area.
Public inpatient services	HKHCHS ^(a) , Royal North Shore and Ryde Hospitals only.	Comparable but Control participants were less likely to use these hospitals.
Out of area public inpatient	Not collected, except in participant questionnaire.	Not comparable
Private hospital inpatient	Only through MBF/HCF (see below), and the largest private hospital (25% of all hospital admissions in this area for this age group in 1996).	Same data set.
Non-inpatient services	? Intervention: HKHCHS manual only; not effective. ? Control: participant questionnaire only.	Not comparable
Accident and emergency	Participant sample questionnaire only	Not comparable
Sydney Home Nursing	Electronic transfer.	Same data set.
Home Care Services	Electronic transfer.	Same data set.
DVA	Electronic transfer from HIC.	Same data set.
MBF/HCF	Hospital claimed by the participant; electronic transfer; effective only at end of trial.	Same data set
Mercy Family Centre or Community Options	? Intervention: manual collection from MFC 8/98. ? Control: participant questionnaire only.	Not comparable.
Meals on Wheels	Sample manual comparison month 1998 and 1999.	Comparable for sample month.
Other HACC services (transport, home maintenance and gardening)	Not collected, except in sample period in participant questionnaire.	Sample only.
Volunteer and unpaid services	Not collected, except in sample period in participant questionnaire.	Sample only.
Client paid services	Not collected, except in sample period in participant questionnaire.	Sample only.

Note: (a) Hornsby Ku-ring-gai Hospital and Community Health Services

4.2 e Financial Management by Care Coordinators

The link between care coordination and fund pooling, the two key parts of the coordinated care Intervention, operated through the care planning process and associated financial discretion provided to CCs. Following the rationale of devolving budgetary responsibility to case managers (Davies, 1992: 58), Linked Care attempted to vest financial discretion in CCs and their Peer Support Groups.

During the trial, the implementation of financial accountability mechanisms for CCs remained in question in two respects. The were:

- ? the implementation of the envisaged information system to support care plan financial decisions proved to be more difficult than had been envisaged; and
- ? the effectiveness of CC peer review as a control on CC discretion concerning significant financial decisions was limited.

In addition, the question of the willingness of some CCs to make care plan changes that had financial implications remained unclear. Only a minority of CCs requested changes to care plans that incurred a large financial cost.

Financial Guidelines

Linked Care provided guidelines to vest financial decision-making in the CCs, to restrict unnecessary withdrawals from the fund pool and to enable consistent decision-making. The procedures formalised requests for substantial increases in care or to substitute care from preferred providers with private agency care.

The model was originally designed with financial requests to be made through Peer Support Groups (PSGs) rather than Linked Care administration. Requests were to be made in writing and faxed to other PSG members who were to respond by fax. Extraordinary meetings could be called for complex matters. Urgent requests could be decided by Linked Care and reviewed at the next PSG meeting.

Accompanying the financial guidelines was a comprehensive list of care available from preferred and other providers in the Intervention area, complete with comparative costs. It was expected that CCs would use this resource to make financially rational decisions in care planning when substituting care or accessing new care.

A small number of financial requests were rejected either formally or informally by following the guidelines. Most requests were initially agreed to by the Linked Care staff rather than waiting for the next PSGs. Requests for additional services received from CCs were then described and ratified in the next PSG meeting. This encouraged problem solving and training about the financial guidelines.

It appears from initial analysis that GP CCs were the least likely to request additional services (Table 4.7). Interestingly non-GP CCs with the fewest participants made the most costly requests (an average of \$179 per participant for ongoing additional services and \$252 for one off costs) but were also most likely to negotiate a participant co-payment.

Table 4.7: Authorised Additional Services by Care Coordinator Type

	Care coordinator type				Total
	GP	Mini	Maxi	Full-time	
Care coordinators	36	21	4	3	54
Participants coordinated	129	62	80	294	565
Ongoing additional services					
Number of requests	9	12	15	43	79
Number per participant	0.07	0.19	0.19	0.15	0.14
Cost to the fund pool	\$8619	\$11152	\$5962	\$27448	\$53181
Cost per participant	\$69	\$179	\$75	\$93	\$95
Client co-payments	0	0	\$727	\$6213	\$6940
One off additional services					
Number of requests	6	15	19	41	81
Number per participant	0.05	0.24	0.24	0.14	0.14
Cost of requests	\$9110	\$15603	\$14035	\$35540	\$74288
Cost per participant	\$71	\$252	\$175	\$121	\$131
Client co-payments	\$470	\$2250	\$920	\$2270	\$5910

Source: Linked Care, March 2000.

Note: For the purpose of this analysis, Linked Care referred to non-GP CCs with <10 participants as mini-CCs; non-GP CCs with 10-20 participants and specific time set aside for care coordination as maxi-CCs.

Requests for additional services ranged from ongoing additional physiotherapy and respite to one off purchases of equipment. The most expensive items were contributions to the cost of wheelchairs (\$4500) and one off live-in care (\$4950). GP requests tended to relate mainly to physical needs (e.g. medication, bed pads, physiotherapy). Respite care was the most frequently requested service both as one off and ongoing care (48 requests) followed by personal care (30 requests).

Substituting Care

As more questions of care substitution and declining health were addressed, the exclusion of nursing home funds from the fund pool appeared to become more problematic. At one PSG meeting those attending discussed the needs of a participant with motor neurone disease who wished to remain at home. They discussed the relative costs of caring for the person at home, in a nursing home or in a hospital. Despite the costs being lowest in a nursing home, they agreed to continue home-based care. This scenario reflected the potential difficulty of excluding nursing home costs from the fund pool.

In addition to decision-making about costly services, interesting questions about accessing free or cheap services were brought by CCs to Linked Care administration and the PSG.

Issues discussed included whether to pay for a possum to be removed from a house; and how to pay for installing a hot water system. To this extent, Linked Care also acted as a brokerage of free or inexpensive community opportunities.

Managing Client Budgets

At the end of the first half of Linked Care, each participant was categorised into one of three care protocol categories, derived from clusters of service use and cost (Final Report, Section 3.4g). Table 4.8 lists the expected cost per year and per care plan (three months) for each care protocol category.

Table 4.8: Expected Cost of Participants' Care by Care Protocol Category, 1997

Category	Percentage of Intervention group	Without hospital admissions		With hospital admissions	
		Average cost/year \$	Average cost/care plan \$	Average cost/year \$	Average cost/care plan \$
A	8	5660	1416	13000	3250
B	20	4800	1200	9900	2475
C	72	3800	950	7170	1790

The design of Linked Care was that after each quarterly review of care plans, CCs were to be informed by Linked Care of the expected cost of the care plan and the actual services used by the participant in the previous quarter. They could compare these figures against the expected average cost for that category of participant. A risk attached to deriving a participant budget from the fund pool estimate was that the budget may act to 'construct' the resultant expenditure. Linked Care had several checks against this risk, including accountability of all CCs to the PSG system.

The categories were abandoned in the second half of the trial, when it became apparent that there was considerable movement between categories and that it was not an accurate predictor of either service cost or CC time.

The financial management of DVA clients was also discussed at PSG meetings. The potential for CCs to monitor, reduce or stop services to DVA clients, but not to affect entitlements, was discussed. It appeared that CCs were unfamiliar with the implications on their care coordination of participants who were DVA clients or privately insured.

Service Usage Reports to Care Coordinators

For a short time in the second half of the trial, the Linked Care information system generated quarterly service usage reports to compare the cost of care plans and actual services, by participant, CC, PSG and total trial. The usefulness of the service usage reports in financial planning by the CCs remained in question at the end of the trial. The process was hampered

by the continued lack of accuracy in the reports and the capacity of the CCs to understand them. Shortcomings in the accuracy of the reports included:

- ? service data collection problems (e.g. no PBS data above the safety net level, delay between service date and data transfer);
- ? unrecorded service use (e.g. private health insurance, additional approved private services, and participant out-of-pocket expenses);
- ? inaccurate costs;
- ? retaining participants who exited during the period in the reports; and
- ? retaining participants without a current care plan in the reports.

Linked Care discontinued distributing the reports to CCs for the remainder of the trial so as to maintain credibility with the CCs. Despite the resource intensiveness of the task, Linked Care remained committed to continuing to try to improve the quality of the reports. A simpler sample report generated by Linked Care at the end of the trial was sympathetically received by CCs in PSG meetings.

The full-time CCs reported that, even in their rough form, the participant service usage reports made them more aware of what services were actually used and the cost of these services. Some data, such as hospital admission and diagnostic procedures, could also be an indication of changed needs that CCs had not necessarily been made aware of through other parts of the care coordination process.

One of the main criticisms levelled at the reports concerned the fact that the reports could only be generated after the expense was incurred. Further, it was felt CCs had so little time that they could barely glance at the reports, let alone fully utilise them or compare the plan with the usage. Care coordinators did not think the reports were essential for the CC role.

A consequence for the CCs of not writing a current care plan was that Linked Care did not generate a service usage report about that participant. This appeared to doubly detract from the care coordination service to the participant because the CC was not even informed of unplanned services used by the participant.

The complexity of designing and operating the Linked Care information system, which Davies describes as an essential system support for case management (1992: 29), appears to account for the differences from the proposed interrelations between the fund pool and care planning processes. It remained in question whether first, it was feasible to implement a complex data reporting process; and second, whether CCs were willing to actively become gatekeepers to their peers' requests for services.

4.2 f Results from the Financial Management

The operation of the fund pool raised a number of issues for the continuation of a coordinated care model. It is clear that Linked Care demonstrated that it was possible to create a fund pool. The extent to which the fund pool was able to provide a viable source of funding for all care needs of participants in the future, is less clear.

A summary of the financial management results are presented in Table 4.9.

Funds were pooled from ten service providers. This was supplemented by an infrastructure grant from CDHAC. Linked Care achieved its first goal, which was to establish an operational fund pool from multiple contributors.

The financial management of Linked Care generated an apparent surplus of \$714 283 of all costs and funds or \$294 599 of ongoing costs and funds. This could be due to service substitution and financial efficiency in Linked Care. However, although inconclusive, the apparent surplus could also be explained by questions about the accuracy of the capitation rates, the incomplete collection of service usage data, questions about the division of administrative costs between establishment and ongoing costs, and the impact of a small number of participants with a high exit rate and no continuous recruitment.

There was little evidence of service substitution or savings opportunities from the operation of Linked Care. In fact when service usage analysis took account of differences between the Intervention and Control participants in baseline service usage and participant characteristics, it showed no decrease in use or cost of any of the services groups and an increase in one (medical and specialist services, Chapter 6). This inconsistency between the fund pool surplus and the stable or increased service use should be examined further.

The administrative costs of the model were relatively high (29.0 per cent of all costs for Linked Care, or 11.7 per cent of ongoing costs), but this was probably because it was a small, temporary trial. The service providers also reported they incurred additional costs supporting the management and operation of Linked Care. One of the reasons for the higher than expected care coordination costs (7.0 per cent of all costs or 6.4 per cent of ongoing) was that the participant category tool was not effective in predicting the degree of care coordination required, perhaps because the tool was based on service use rather than risk, need or participant preference (Final Report, Section 3.4g).

It could therefore be reasonable to conclude that the Linked Care model would not be self-sustaining without a supplementary infrastructure grant. Otherwise, the cost of care coordination and its accompanying infrastructure would need to be covered by a reduction in funds for services used by clients.

Observation of the financial model in Linked Care was useful for identifying the barriers to a fully functional financial system based on CCs facilitating access to care paid from a fund pool of multiple health and community service providers, described below.

The distribution of payments from the fund pool used an arrangement designating contributors to the fund pool as 'preferred providers'. This was different to the competitive or contestable pricing arrangements envisaged in the original documentation of the coordinated care approach (Fine, 1997: 14-15). However, the arrangement appeared to have merit both as a short-term consensus measure to encourage fund pool contribution,

and as a mechanism to enable funds to be more flexibly distributed between partners in a larger scheme. An instance of this was the balance of payments out of the fund pool towards HACC services and away from medical services.¹⁴

A related issue arose from the fact that many service providers operated as part of a larger system of public provision that did not have extensive service charging procedures. Many such services had difficulty adapting their administrative records to the reimbursement model required to support the management of the fund pool. Similarly, it appeared that some CCs subcontracted from the service providers were unfamiliar with making decisions based on financial information about care options.

¹⁴ The service usage analysis showed similarly that although as a service group relative to the Control participants, use and cost of HACC services did not change significantly, within the group, Home Care Service use and cost increased and Northern Sydney Home Nursing Service use and cost decreased (Section 5.4).

Table 4.9: Results from the Financial Management

Intervention	Results
1. Fund pool development	The process of calculating and revising the fund pool was achieved, but in an inconsistent manner between contributors. The complexities of the capitation rate were difficult for several providers to fully understand, with implications such as first revisions not being completed until the last month of the trial. The fund pool was operationally functional.
2. Infrastructure budget	Infrastructure costs was contained within the additional grant and a 3 per cent levy on the fund pool. The fund pool would have been insufficient to cover all establishment costs. It may possibly have covered ongoing costs.
3. Financial outcomes	Linked Care operated within its fund pool and infrastructure grant budget. A more restricted analysis of ongoing costs (excluding trial, start up and wind up costs and the infrastructure grant) also revealed a surplus and an infrastructure cost of 11.7 per cent of expenditure from the fund pool. Conditions on these conclusions include a possible overestimation of contribution rates, incomplete capture of service usage data and discretionary allocations of costs to start-up and ongoing expenditure. The apparent surplus is inconsistent with the service usage analysis (Section 5.4).
4. Client costs	Data were inconsistently collected. Participants reported not contributing to the cost of care to the same extent as before the trial, or compared to the Control participants.
5. Service usage data	Difficulties included collecting and importing manual data; incompatible IT systems; and delays in data transfer. Many providers were unfamiliar with managing participant-based data.
6. Financial management by CCs	The inaccuracy of the service usage reports to CCs and delay in providing financial information prevented this part of the Intervention from being fully tested. The goal of CCs managing a budget could not be tested. Full-time CCs appeared more willing to experiment with a wider range of care options.

4.3 Care Coordination

4.3 a Introduction

In recent years case management, and one of its derivatives, care coordination, has become popular with Australian health funders as a means of improving the efficiency of resource allocation to clients with complex care needs. This section explores the ability of the Linked Care model of care coordination to meet that goal for clients with complex care needs who live at home, predominantly older clients and some younger people with disabilities.

Care coordination, like other services, comes at a cost. This cost is the transaction cost incurred in the process of organising the care that other agencies deliver. Until the CCTs, this cost has been contained in existing case management mechanisms. In Australia cost efficiency was gained through: restrictive eligibility criteria, as occurs with Community Options/Linkages services and Community Aged Care Packages; rationing that results from block funding when time-restricted case management or coordination is provided by agencies such as Aged Care Assessment Teams and; case management combined with funding initiatives such as individual packages or fund pooling.

Linked Care distinguished itself from previous initiatives. In its model care coordination moved from being a targeted or time limited intervention to the designated mode for organising all care for all participants in Linked Care. The evaluation of Linked Care, therefore, provided a valuable opportunity in two ways. First, it tested the robustness of different emergent case management models. Second, it assessed the suitability of these models for linking those with ongoing needs with the wide range of services and sources of support that were included in Linked Care.

The model of care coordination in Linked Care was that each of the clients were appointed a CC who was either their GP or an employee from an agency that provided them with other health and community care. Care coordinators formal roles were to assess, plan, arrange, monitor and review care needs and services. The CC, in consultation with the participant and relevant service providers, prepared a care plan for the participant at least every three months, including both medical and other health and community services. Services provided to the client and care coordination costs were paid for from a fund pool of health and community care funds. Services used were reconciled against the care plan as feedback to the CC. Care coordinators were accountable to each other for significant financial decisions through a Peer Support Group (PSG) structure.

Care coordinators were subcontracted from existing service providers. For most CCs therefore, care coordination was only one of their duties. However during the trial full-time CCs evolved although they were still subcontracted. As a result of subcontracting arrangements with various service providers, CCs had variable knowledge and skills and came from a range of disciplines.

The Linked Care model of case management could be typified as the low intensity approach. The full-time CCs had up to 100 clients each and CCs were paid to provide

Case Management (CM) services for an average of 19 hours per annum.¹⁵ Using a model of low intensity CM created tension with existing case managers in the sector who delivered a more intensive form of CM (for example, the Community Options Program case managers)¹⁶ and with trial CCs who felt it was their professional duty to perform more intensive tasks. Irrespective of extra time-consuming duties, perhaps the most significant issue in the conduct of care coordination was the delay experienced in the preparation of care plans (which were compulsory to the CC position). Some CCs were GPs or service employees who continued to have a major role in direct care provision. A source of difficulty for CCs in these positions was their inability to dedicate all their time to the work of care coordination and the preparation of care plans.

Another distinguishing feature of Linked Care was the financial flexibility offered by forming a fund pool. However, there appeared to be little evidence of service substitution or gatekeeping by the CCs. Perhaps this was because the care coordination mechanism served only as a means of enhancing access to care in a system in which direct access to primary care and other facilities continued to operate independently of Linked Care.

This section examines in more detail the various aspects of the care coordination model including a discussion of who the CCs were, the process of care coordination, the role of care planning, the function of the Peer Support Groups, participant category care protocols and quality assurance activities. A concluding discussion on issues and results from the Linked Care model of care coordination ends the section.

4.3 b Care Coordinators

Subcontracted Care Coordinators

Linked Care chose a model of subcontracted care coordination to minimise duplication of existing coordination and cost and build on existing client relationships. Several issues have arisen in relation to the subcontracting model of care coordination: a preference for specialist full-time CCs; problems associated with continuity of care for clients; and lack of accountability to Linked Care. The anticipated model of care coordination changed during the Linked Care Trial. This section describes the development of the CC model and some of the reasons for the changes.

The care coordination function was subcontracted to GPs and employees of service provider agencies. Initially there were three types of CCs:

- ? GPs;
- ? non-GP service provider staff who added Linked Care coordination to their existing responsibilities; and
- ? five ‘super CCs’ employed by three service providers to exclusively fulfil the Linked Care role. Three of these CCs (from the Aged Care Assessment Team and Home Care

¹⁵ During the first half of the trial they were expected to spend 10 to 16 hours depending on the complexity of the participant’s care coordination needs. This was revised after surveying CCs about how much time they actually spent on care coordination tasks.

¹⁶ Some Linked Care participants had both a trial CC and another community case manager.

Service) were responsible for over 80 participants each and two Northern Sydney Home Nursing Service relief staff had 17 participants each. They are referred to as full-time CCs throughout the remainder of this report.

All participants were allocated to a CC during the first year of Linked Care. Approximately 60 were reallocated in October 1998 because their GP CC had failed to write an initial care plan in the previous 12 months. The second reason for reallocation of participants was employment changes within the agencies. Two Home Care Service (HCS) branches amalgamated. During the restructuring, only two full-time CCs remained responsible for all the HCS clients. Staff changes in Sydney Home Nursing Service also meant that new CCs needed to be trained. Training new CCs was an ongoing management issue for Linked Care and agencies as they reallocated participants to new CCs due to regular staff turnover.

Linked Care attempted to allocate CCs from the two agencies that managed Community Aged Care Packages (CACP), Mercy Family Centre and Wesley Gardens, to Linked Care participants who were CACP clients. This was to avoid duplication of care coordination tasks between Linked Care and CACP.¹⁷

Table 4.10 lists the agency to which the care coordination function was subcontracted, the number of CCs at the mid-trial point, and the proportion of clients who were coordinated by them.¹⁸

Table 4.10: Care Coordinator Type by GPs and Subcontracting Agencies, December 1999

	CCs trained n	Full-time CCs n	CCs at end of trial n
GPs	82	-	30
Home Care Service	5	2	2
Mercy Family Centre	7	-	7
RACS (ACAT)	10	1	5
NSHNS (Hillview)	17	-	2
NSHNS (Hornsby)	14	-	3
Wesley Gardens	2	-	1
Total	137	3	50

The number of participants for whom a CC was responsible varied considerably from an average of 98 for full-time CCs to three for GPs and other CCs (Table 4.11).

¹⁷ This allocation strategy was negotiated after disagreements about care coordination by some GPs who initially acted as these participants' CCs. The funding for the Wesley CACPs was not included in the fund pool. Management of CACP clients continued to be problematic and the subject of negotiation with the agencies.

¹⁸ Final allocations of CCs were made at the mid-trial point. The number of participants continued to reduce during the second half of the trial. This reduced the number of CCs.

Table 4.11: Care Coordinators and Participants by Care Coordinator Type

	Care coordinator type				Total
	GP	Mini	Maxi	Full-time	
Care coordinators	36	21	4	3	54
Participants	129	62	80	294	565
Average participants per CC	3.6	3.0	20.0	98.0	8.8

Source: Linked Care and CDHAC Sydney analysis, March 2000.

Note: For the purpose of this analysis, Linked Care referred to non-GP CCs with <10 participants as mini-CCs; non-GP CCs with 10-20 participants and specific time set aside for care coordination as maxi-CCs.

GPs were recruited to Linked Care through the Division of General Practice and given first option to care coordinate their patients who had joined Linked Care. If the GP did not accept that option, a CC was appointed from another agency that provided care to the participant. Miscellaneous participants, for example, those who did not receive ongoing care, were generally allocated to an agency with full-time CCs.

Short-comings of Subcontracting

Subcontracting care coordination presented several problems to Linked Care. First, difficulties appeared to arise because some CCs did not experience a link between their responsibilities and the financial return for care coordination. As a result, they expressed resentment at the time commitment required to fulfil the full range of responsibilities for being a CC.¹⁹

The second concession from subcontracting care coordination was that Linked Care relied on the agencies to support their employees to fulfil the care coordination responsibilities. Similarly GPs were self employed without direct support. They reported that the lack of support compromised the quality of care coordination. Linked Care staff were of the opinion that for a model of subcontracted care coordination to succeed, active support and involvement from service line managers, and perhaps the Division of General Practice, was needed.

The final difficulty in relation to subcontracted care coordination was in relation to continuity of care by non-GP CCs, both in terms of turnover and relief when they were on leave. Transition arrangements when participants changed service providers were not formally resolved between Linked Care and the subcontracting agencies and GPs.

These developments were interesting from the point of view of the evaluation. It appeared that with non-GP agencies Linked Care possibly lost some of the value of subcontracting coordination; that is, the benefits of supplementing existing coordination duties and prior

¹⁹ Similarly, some CCs reported conflict when their Linked Care participants were not their ongoing service clients. If the Linked Care participants had comparatively lower needs than their other clients, they reported being frustrated about the time required to fulfil their CC obligations to participants that would otherwise not have been prioritised (Linked Care staff interviews 19-20 May 1999).

knowledge of participants. Instead, because this trial was not directly involved in the selection, supervision or quality control of the duties of CCs, the subcontracting model appeared to incur disadvantages compared to the slightly different model of full-time CCs employed by other trial administrations.

GP Care Coordinators

Initially GPs were the largest group of CCs (approximately 56 per cent). From Table 4.9 it is clear that despite Linked Care promoting care coordination by GPs, the final proportion of clients coordinated by GPs was less than one quarter of all participants because each GP coordinated only a small number of participants. Without continuous recruitment, as participants left Linked Care, GPs also exited as CCs because they had no patients left in Linked Care. Similarly, many of the GPs who initially exited from the care coordination role despite having completed the training, also did so because they did not have any patients in Linked Care. Other reasons for the exit of GPs included the prolonged recruitment process and their realisation of the complexity of the CC role.

Although it could be said that for some GPs these quality control disadvantages to Linked Care are also present, at least the continuity of care benefits of subcontracting still existed. However, it also appeared that even if GPs were diligent in their CC role, some were finding that fulfilling the five steps of obligations was tedious and time consuming, particularly arranging and monitoring care.²⁰

Most GPs in the mid-trial focus group expressed the view that the GP role in care coordination should be central and one in particular felt that GPs who were interested in taking on more care coordination throughout the trial should be able to do so at any time. Joint assessments by a GP and social worker were suggested, as were clearer guidelines and procedures. In both the baseline and end of trial GP questionnaires most GPs reported that patients saw them as coordinators of their clinical care, but were significantly less certain that this was so with community care.

Full-time Care Coordinators

Full-time CCs represented a change in the strategy of some service provider managers who had originally intended to provide care coordination through existing staff. These service providers decided there was sufficient financial security from the care coordination cost reimbursement by Linked Care to employ additional staff to specifically undertake the role. They reported this new strategy had the advantage that existing staff were not burdened with additional work.

The Quality and Complaints Working Party noted that the disadvantage of care coordination by specialist CCs was that the CC was not the carer who was already familiar with the participant and their needs through other service delivery. However, some non-GP service CCs reported that they were also not care coordinating participants with whom they had prior contact.

²⁰ Assessment, planning, arranging, monitoring and reviewing; Linked Care staff interview.

Despite these criticisms the only remaining subcontracting agencies that did not adopt the full-time CC model were, apart from GPs, the agencies whose CCs were also specialist case managers for CACPs and COPs. The Linked Care administration also reported that management of CCs was most successful in relation to the full-time CCs because this type of CC had the time and motivation to understand and implement the new processes expected by Linked Care. Nearly half the CCs reported a conflict between their care coordination role and their other work (42.2%; Table A7.1).

The full-time CCs thought that being employed by a community-based service provider had not necessarily enhanced the CC role.²¹ There were several reasons for this: being attached to a community agency had little credibility with some GPs; and the CC tended to personify Linked Care and its attached stigma as generated by the inequity compared to other clients.²² On the other hand, being employed by the hospital as a CC was reported as possibly having been an advantage because it facilitated direct contact, access to services, and discussing ideas. They thought that it had probably advantaged the subcontracting agencies to have full-time CCs located in their service because other agency staff became more familiar with the project, softened their attitude to the project and sometimes improved their service delivery when full-time CCs coordinated their clients.

Multidisciplinary Model

The multidisciplinary model of care coordination operated reasonably smoothly throughout the trial. The multidisciplinary context of Linked Care was an opportunity for the often disparate parts of the medical and broader health and community care sectors to share their expertise, especially in the context of the PSGs. Non-medical CCs were able to learn about and possibly influence the role of the medical practitioners in providing care, just as much as GPs could learn about recognising non-medical needs and accessing appropriate care.

There was some tension between the three types of CCs. Agency CCs expressed their disgruntlement to the evaluators and trial management at the differentials between the CC types. Staff from some agencies perceived that the Linked Care structure gave favourable treatment to GP CCs through:

- ? higher financial reimbursement for GPs;
- ? one session of training for GPs once the training process had been refined, compared to two sessions for staff from agencies; and
- ? an expectation by some agency CCs of lower quality care coordination from some GP CCs because of GPs' relatively lower exposure to the full range of health and community services.

Some GPs reported they found it time consuming to access non-GP CCs and other services, but they stated Linked Care appeared to have improved their patients' access to

²¹ Full-time CCs interview 6 May 1999.

²² See Chapter 3 for more discussion about perceived inequity.

services and their own awareness of other services. GPs reported it had also improved awareness of and referral to GPs.²³

Level of involvement for care coordination

Debate about the difference between CCs and case managers continued throughout the trial. Some clients had both a CC and a case manager from their funding package. CCs had different views about whether the CC role supplemented or superseded the case manager role. One full-time CC thought that when their clients also had a case manager, the CC role effectively superseded the other.²⁴

This tension was evident in other discussions of care coordination. The issue of what care coordination entailed was not resolved to the satisfaction of some of the community-based services. For example some case management service providers did not understand why CCs referred trial participants for a COPs. Their perception of this was that the CCs were not fulfilling their role.²⁵

The Linked Care administration appeared to support a less 'hands on' role for CCs than provided by case managers. The divergent views about the CC role became apparent after a PSG meeting. During the meeting a non-GP CC had discussed helping a participant to access community services and deal with financial difficulties.²⁶ Linked Care staff later explained to the evaluators that this level of involvement was because of her other professional role as case manager, whereas a CC was expected only to arrange the total balance of care including community and clinical care, rather than provide daily assistance.²⁷ This was a perspective probably also more realistic for the full-time CCs with 60-80 clients.

Training

All CCs received training from Linked Care which included: the background and organisation of Linked Care, the responsibilities of being a CC, and the writing of care plans. Procedures and resources were listed in a Care Coordinators Manual and this was updated with occasional bulletins when new procedures were developed or refined. As well as training about the care coordination procedures, considerable time was spent on gaining the CCs' confidence in Linked Care.

Interestingly, in the Establishment Phase, both medical and non-medical CCs strongly stated that they already knew how to coordinate care because of their professions. Training was therefore offered on Linked Care processes only. It was apparent from the mixed quality of care plans and from comments at the mid-trial CC workshop, that some CCs found the care coordination process difficult. Linked Care required them to step aside from the familiarity of their discipline and recognise and act on broader needs.

The mid-trial workshop updated all CCs who attended on trial progress and included: new procedures; working sessions to develop quality control measures in care coordination; and

²³ Mid-trial GP focus group.

²⁴ Full-time CCs interview 6 May 1999; Service Managers meeting 18 March 1999.

²⁵ Quality and Complaints Working Party May 1999.

²⁶ PSG meeting 19 May 1999.

²⁷ Linked Care staff interviews 19-20 May 1999.

suggestions for future directions for the remainder of Linked Care. Priorities identified by the CCs to maximise the benefits of the multidisciplinary model included:

- ? improving the quality of the care coordination process; and
- ? increasing education and training for CCs. This recommendation was not taken up by Linked Care. The only ongoing training opportunity was in the PSG meetings.

Payment

Remuneration of CCs initially varied according to the participant care protocol categories of their participants. Linked Care paid a fixed sum based on an hourly rate for an estimated annual number of hours of care coordination for each care protocol category of participants. The hours were estimated by Linked Care administration after prolonged discussion in the Care Coordination Working Party.²⁸

The payment system was revised in the last year of the trial so that rather than relying on the client care protocol categories to determine the level of payment to CCs, a flat rate of 19 hours per annum would be paid for non-GP CCs. The only remaining variation between subcontracting agencies would be the hourly rate. The second change would be to pay GP CCs only 8 hours per annum, in recognition of their lower average time spent care coordinating and their ability to charge for normal consultation activities through Medicare. Table 4.12 illustrates that payment schedule.

Table 4.12: Estimated Annual Care Coordination Hours and Payment by Client Protocol Categories

	All clients	Client category			Hourly rate
		A	B	C	
Initial rate 1997					
GPs ^(a)	16	12	10		\$100
Non-GPs ^(b)	16	12	10		\$25 – 35
Revised rate 1999					
GPs ^(a)	8				\$100
Non-GPs ^(b)	19				\$25 – 35

Notes: (a) Part of the GP payment is received through a Medicare consultation.
 (b) Negotiated with each employing agency.

4.3 c Care Coordination Process

Linked Care’s care coordination process was deliberately developed as a mechanism separate from existing coordination provided by the service providers who contract to

²⁸ Some HACC agency representatives on the working party disagreed with Linked Care administration about estimations of care coordination time and therefore about reasonable financial return.

supply the care coordination services.²⁹ Care coordination was expected to include four tasks:

- ? prepare a care plan;
- ? reach agreement with the client and service providers;
- ? arrange the services; monitor the plan and participant's needs; and
- ? review the plan at least quarterly.³⁰

Various administrative mechanisms were planned to support that process. They included data entry to generate a computerised care plan, service usage reports, quarterly attendance at Peer Support Group Meetings, and Bulletins to update the Care Coordination Manual. This section discusses the experiences in implementing the care coordination process, first, from the perspective of CCs and Service Managers.

The following presents CC views of Linked Care, and is a summary of results of the CC mid-trial (November 1998) and end of trial (November 1999) questionnaires. A full table of results is presented in Appendix 6. Views from the end of trial service managers questionnaire are also presented in this section.

Table 4.13: Care Coordinator Views of Linked Care, 1998 and 1999: Delivering care

	1998		1999	
	n	%	n	%
Trial created problems in delivering care				
Yes	9	20.9	2	4.3 **
No	34	79.1	44	95.7

** p<0.05

Fewer CCs thought Linked Care was creating problems in delivering care at the end of the trial (4 per cent) than they did mid-trial (21 per cent). Similarly, although most CCs (80 per cent) thought Linked Care was not creating problems in delivering care mid-trial almost all thought Linked Care was not creating problems in delivering care by the end of the trial (96 per cent) This may be because the systems and processes implemented for Linked Care were operating more effectively at the end of the trial than they were at mid-trial, because over time difficulties and problems had been overcome.

Responding to a question about problems delivering care, one CC commented that because Linked Care provided extra care 'for free', participants (and their families) sometimes expected more service than the CC's assessment recommended. In the CC's view, this made it awkward for the CC, and the participant's respect for the CC and the service lessened as a result, which in turn made delivery of care more difficult.

²⁹ Existing care coordination within the sector is examined separately in Chapter 5.

³⁰ These tasks are similar to the usual tasks of intensive case management (Naleppa and Reid, 1998: 64; Quinn, 1995: 239, 244).

Of the six service managers surveyed at end of trial, four responded that the trial had created problems in delivering care. One service manager commented that extra time was spent justifying a professional nurse care plan to a non-nurse Linked Care coordinator. The issue of extra time spent in carrying out care coordination duties is explored more further shortly.

Table 4.14: Care Coordinator Views of Linked Care, 1998 and 1999: Health and well-being of clients

	1998		1999	
	n	%	n	%
Trial affected health and well-being of participants				
Positive change	15	34.1	15	32.6 *
Negative change	0	0.0	1	2.2
No change	24	54.5	30	65.2
Don't know	5	11.4	0	0.0

* p<0.10

The proportion of CCs who thought Linked Care had affected the health and well-being of their participants in a positive way did not change markedly from mid-trial to end of trial, perhaps indicating those who were committed to Linked Care and believed it was of benefit remained so throughout. Whereas no CCs surveyed thought Linked Care was having an adverse effect on the health and well-being of their participants mid-trial a very small proportion (2 per cent) believed this to be the case by the end of the trial. Just over half of the CCs surveyed at mid-trial believed Linked Care was not affecting the health and well-being of their participants. This had grown to 65 per cent by the end of the trial. While a little over 10 per cent of CCs could not answer the question at mid-trial, everyone could make an assessment of the impact of Linked Care on the health and well-being of their participants by the end of the trial (Chapter 5).

Table 4.15: Care Coordinator Views of Linked Care, 1998 and 1999: Strategies to involve clients in care plans

	1998		1999	
	n	%	n	%
Used strategies to involve participants in care plans				
Yes	28	65.1	26	56.5 ***
No	12	27.9	19	41.3
Don't know	3	7.0	1	2.2

*** p<0.01

The proportion of CCs who used strategies to involve participants in care plans dropped from 65 per cent at mid-trial to 56 per cent by the end of the trial. Similarly, the proportion of CCs who did not use strategies to involve participants in care plans increased from 28 per cent mid-trial to 41 per cent by the end of the trial. The reasons for this result are not clear. Perhaps strategies to involve participants in care plans became less relevant at the end of the trial because many participants had already become involved by this stage (perhaps as

a result of strategies used previously by CCs). Or perhaps some (part time) CCs, already pushed for time, had stopped trying to involve clients because of the time consuming nature of consultation³¹. Some CCs commented on time constraints effecting their ability to carry out care coordination duties³². This is also borne out in responses to the question concerning conflict in care coordination and other work roles asked in the end of trial CC questionnaire.

Approximately half the CCs surveyed believed there was a conflict between their CC role and other work at mid-trial and the end of trial. Approximately 80 per cent of CCs surveyed believed Linked Care did not cause problems in coordinating and planning care at mid-trial and the end of trial. While only 7 per cent of CCs strongly disagreed that Linked Care had more benefits than disadvantages for their service/practice mid-trial this rose to 22 per cent disagreeing by the end of the trial. These responses are not statistically significant. Four of the six service managers surveyed at the end of the trial responded that there was a conflict between their service's role in the trial and their other service delivery. As will be discussed in more detail shortly, service managers commented that this was because of extra time and paperwork detracting from their ability to provide service, sometimes causing delays in service provision for clients outside Linked Care.

The average time committed to coordinating care varied considerably. It appeared to be related to CC type, with GPs on average spending less time than non-GPs (2 hours compared to 7 hours per quarter). Some CCs mentioned that the time commitment created conflict between their role as a CC and their other work responsibilities.

Other goals of Linked Care also appeared to be being achieved, with half the CCs reporting improvements in access to service delivery and the majority reporting positive changes in links with other services. Gaining cooperation from service providers in the care planning process was a problem for only some CCs.

Most CCs were satisfied with the support provided by the Linked Care administration.

CCs were asked about the balance of benefits and disadvantages of Linked Care to their service or practice. Their responses are presented in Table 4.16. In an interesting result, GPs were more likely to be positive or neutral about the impact of Linked Care on their practice than were other CCs about the impact on their organisations.

³¹ Hypothesis 10 (see Appendix 3) outlines that participants should be involved in the care coordination process as much as possible

³² End of Trial CC survey comments

Table 4.16: Care Coordinator Views: Trial has More Benefits than Disadvantages (Mid-trial November 1998)

	1 Strongly agree %	2 Agree %	3 Neutral %	4 Disagree %	5 Strongly disagree %	Median
For my clients	18.2	31.8	36.4	13.6	0.0	2.5
For my other clients	2.3	11.4	52.3	18.2	11.4	3.0
For my service or practice	9.1	25.0	36.4	20.5	6.8	3.0

Table 4.17: Care Coordinator Views: Trial has More Benefits than Disadvantages (End of trial November 1999)

	1 Strongly agree %	2 Agree %	3 Neutral %	4 Disagree %	5 Strongly disagree %	Median
For my clients	11.1	40.0	28.9	8.9	11.1	2.0
For my other clients	2.2	11.1	35.6	26.7	24.4	4.0
For my service or practice	6.7	17.8	37.8	15.6	22.2	3.0

By the end of the trial a greater proportion of CCs surveyed strongly disagreed that Linked Care had more benefits than disadvantages for their linked care clients, their other clients, and their service or practice. However, examination of the median suggests that it is in reference to the statement concerning other clients not in Linked Care that opinions of CCs has shifted from neutrality to disagreement. As has been noted elsewhere, several comments were made in the end of trial service personnel questionnaire by service personnel about the inequity of service provision between trial and non- trial clients.

At the end of the trial service provider managers were also surveyed and asked whether the trial had more benefits than disadvantages for their clients participating in the trial, and for their service or practice (Section 5.3). Of the six managers surveyed, one was neutral and two agreed that the trial had more benefits than disadvantages for their participating clients, while three strongly disagreed with this statement. All six, however, strongly disagreed with the statement that the trial has more benefits than disadvantages for their service or practice. Service managers also made comments suggesting extra time and paperwork detracted from their ability to provide service, sometimes causing delays in service provision for non-Linked Care clients. This is consistent with service staff comments made in the service personnel questionnaires that suggested services were hampered in providing service by the amount of paperwork and time associated with Linked Care.

4.3 d Care Plans

What follows is a description of how care plans were used through Linked Care, and what problems and difficulties arose in their use. Some of the difficulties outlined below could also account for the decrease in number of CCs who used strategies to involve participants in care plans by the end of the trial.

CCs were required to meet with participants to discuss care needs and prepare a handwritten plan for changes to care arrangements in the next quarter. Both the CC and the participant were required to sign the plan to indicate their participation in the process.

The care plan had two parts: the medical care plan including diagnosis, medical attendances and medication information completed by the participant's GP; and the remainder of the care plan including all other health and community service care. The care plan was to include all care planned for the participant, including formal and informal care. After preparing a handwritten plan, the CC submitted it to Linked Care administration, to generate a computer version of the care plan with expected costs of services.

Only 7.5 per cent of care plans were signed by participants. This low figure should be treated with caution however, as CCs were told the signature was only required on the first care plan and data entry staff made some assumptions about participant signatures. However, principles of participant involvement should probably have encouraged a higher proportion than this.

As was noted in the previous section, the proportion of CCs who used strategies to involve participants in care plans dropped from 65 per cent at mid-trial to 56 per cent by the end of the trial. Similarly, the proportion of CCs who did not use strategies to involve participants in care plans increased from 28 per cent mid-trial to 41 per cent by the end of the trial. It is hard to know why these changes have occurred from mid to end of trial. As previously mentioned, perhaps strategies to involve participants in care plans became less relevant at the end of the trial because many participants had already become involved by this stage (perhaps as a result of strategies used previously by CCs). Or perhaps time constraints and conflict in roles were causing these changes in views by the end of the trial.

A quality checking process was implemented to manage the transfer of data from the written care plans to the electronic format by Linked Care staff. Handwritten care plans were checked for completeness and legibility. After data entry, the electronic version was checked against the written version for comprehensiveness. These processes were implemented to overcome initial problems such as inaccurate transfer of data from handwritten care plans; and difficulties transcribing medication names and information on the frequency of service delivery. The steps appeared to result in improved quality and efficiencies.

Linked Care administration struggled to implement its administrative obligations in the care coordination process. It was intended that a computer-generated version of the care plan be returned within three days of Linked Care receiving the handwritten version from the CC. The backlog of both the initial care plans and care plan reviews waiting data entry meant this data entry goal was not achieved throughout the trial period, although the turnaround time was manageable by the mid-point of Linked Care. A three-day turnaround was probably

unachievable with the quality assurance measures that were a part of the data entry process, even after the employment of additional data entry staff. Meeting other obligations hinged on the data entry process, obligations such as: quarterly reviews of the care plans; reminders for reviews; payment to CCs; copies of the care plans to service providers; and financial reports to CCs for discussion at PSG meetings.

One of the functions of the information management system was to inform the care coordination process through feedback of both the cost of care plans and service usage data. Feedback to assist CCs make care plan review decisions based on financial information only became partially operational in the second half of the trial (Section 4.2 e).

A resource list of available care in the local community and the associated costs was also distributed to CCs by Linked Care to assist in preparing care plans in the same period. This list was planned from the beginning of Linked Care but its preparation took considerably longer than expected.

This prolonged roll-out of parts of the care coordination process probably delayed additional goals for care coordination, such as incrementally improving the mix of services delivered under care plans through substitution and regular reviews of needs.

CCs reported that only in a minority of cases did Linked Care create problems for delivering care (4.3 per cent)³³ or coordinating and planning care. Given that Linked Care was intended to enhance coordination this latter result is of concern and may reflect the comments that the model duplicated rather than complemented existing coordination (Section 3.2). By the end of the trial only 17.8 per cent of CCs had problems persuading services to cooperate in the care coordination process, indicating some success in the care coordination process.

Difficulties that arose in the care planning process began with the delay in implementing the process. Both the CCs and the Linked Care administrative system were the source of delays. The process relied on newly established information systems (data recording, data entry and report generation) which were unfamiliar to CCs and service providers. Some care plans were not submitted until at least 12 months after the participants were activated in the trial. Some CCs found the process of recording plans on paper and reading written feedback alien and burdensome.³⁴

Overall 2881 care plans were prepared, an average of 6.3 plans per participant. This falls short of the expected number of plans (3974 or 8.7 plans per participant)³⁵ by 38 per cent. Explanations could include administrative delays by Linked Care such as allocating or reallocating a CC; or CCs not fulfilling the requirement to prepare consecutive quarterly care plans.

The time spent on quarterly care plan reviews was significantly less than on the initial plans, but it continued to be a demanding process for some CCs and Linked Care administration as reviews appeared to continue to be part of the initial process of more thoroughly

³³ Reported problems delivering care were significantly worse at the mid-trial (20.9%).

³⁴ GP mid-trial focus group; service personnel questionnaire, May 1998, November 1999.

³⁵ Calculated on the basis of quarterly care plans for 11,923 active client months in a 26-month trial, with an average of 459 active clients per month.

documenting existing service usage. Without reminder notices some CCs appeared unable to self-manage a care plan review process.

Some CCs, particularly full-time CCs concluded that that having a written care plan was an important mechanism to set goals and provide a big picture of needs and goals. But there was disagreement about how far copies of the care plan should be distributed. For example, they felt that a copy should be given to the GP but not services like ACAT and HCS because its content was too difficult to understand for many participants and other service providers, and was often out of date or incomplete.

Medical and Other Needs

One of the difficulties in the care planning process continued to be generating a link between the medical and community side of the care plans. Some GPs who were not CCs had been very slow to provide participants. It appears that Linked Care staff visiting or personally telephoning them was an effective, if costly, way of obtaining the medical data. These strategies were not as successful for the CCs themselves and Linked Care did not always forward a copy of the medical care plan to non-GP CCs.

On the medical side, Linked Care staff observed that some GP CCs did not appear sure that they wanted to adopt the community aspect of their care coordination role. At a PSG meeting some GPs expressed a lack of interest in the planning except as it related to medical issues.³⁶

Non-GP CCs reported that it had generally been difficult to contact GPs or receive feedback from them. Providing GPs with a copy of the care plan was at least one way of keeping them informed. However, GPs reported that in some cases they were not given a copy of the care plan about their patients by non-GP CCs.³⁷ Where they had shared ideas it was reported as useful for improving the care for the participant.

How to implement processes to improve the quality of the medical aspects of the care plan proved to be a continuing issue for the Quality and Complaints Working Party. GPs themselves were reluctant to be reviewed, as evidenced by the reaction to the Patient Medication Management System (PMMS) initiative (see Final Report, Section 3.5). Agency CCs also expressed a reluctance to broach the professional divide by raising questions about medical care and expressed resentment at spending time at PSG meetings “educating GPs about how to use services and fill out care plans.”³⁸

The division between GPs and community-based service providers appears to remain. Although both groups express their support for an interdisciplinary coordinated care approach there were criticisms about lack of communication between CCs, GPs and community agencies concerning care available to participants.

³⁶ Staff interview 8 April 1999.

³⁷ QCWP May 1999.

³⁸ CC interviews, May 1998.

4.3 e Peer Support Groups

Peer Support Groups (PSG) were intended to be an integral part of the care coordination process. Care coordinators were expected to attend quarterly two hour PSG meetings to review the care plans written and the services used in that quarter, make financial decisions about changes to care plans, discuss problems and exchange ideas.

At each meeting CCs were to be provided with summary reports about their care coordination activities, and financial information about the care plans and service usage for each CC and the group as a whole. Each PSG had a notional allocation of the fund pool derived from the proportion of participants in each protocol category. This part of the care coordination process was never fully implemented, because of the limitations to the information system.

Issues arising at PSG meetings were documented to disseminate to other groups for information and discussion. The notes were taken without recording the name of the speaker, to encourage full participation.

During the trial seven rounds of PSG meetings were held. Initially to accommodate all the CCs, 14 groups were organised. PSG members were selected to have representatives from different disciplines in each group. Full-time CCs attended more than one PSG meeting each round to share their experiences and so that there was time to address issues pertinent to each of their participants.³⁹ As the number of CCs reduced the groups were consolidated into seven groups of up to ten CCs.

Attendance was a problem. On average less than 60 per cent of CCs attended meetings. Only full-time CCs fulfilled their requirements. GPs and non-GP CCs with few participants were less likely to attend. CC reimbursement was to have been contingent on attending but this rule was not enforced. It was envisaged that the same group of CCs would regularly meet to develop support and accountability to each other for the content of their care plan, including costs. However, the complexity of compelling up to 10 groups of 12 coordinators to meet at mutually convenient times each quarter proved too great. It appears that as a training forum PSGs were not effective for CCs contracted under this model of care coordination.⁴⁰

PSG meetings discussed issues such as improving the quality of the care plans (e.g. illegibility of care plans, incomplete data, and the plans addressing only some of the health and well being needs of participants). The second round concentrated on encouraging the completion of initial care plans. Linked Care staff were concerned not to estrange CCs in the early stages of Linked Care by demanding too much. By the second round, CCs were impatient to receive the resource list of available services and their costs, and the financial reports from Linked Care to enable the PSG meetings to focus on financial planning.⁴¹

³⁹ They reported this process as being repetitious.

⁴⁰ The pattern of attendance may be different for an alternative model of care coordination. For example if care coordination was a greater proportion of the CCs work responsibility.

⁴¹ The resource list was distributed by November 1998 and partial financial reports were available in 1999.

The remaining PSG meetings continued to attempt to improve the quality of care coordination within the multidisciplinary framework through:

- ? reviewing client service usage reports (that compare care plan and service usage costs and patterns. The information system did not deliver sufficiently accurate reports for this to be achieved fully);
- ? reviewing requests for additional services;
- ? reviewing complaints;
- ? providing educational support through reviewing selected case histories on subjects such as substitution and disease group management; and
- ? providing training about new procedures (e.g. private hospital admissions; informing Linked Care of exits; printing CIARR, the area-wide common assessment form; medication reviews; and care plan reviews).

The multidisciplinary aspect of the PSG seemed to be its greatest strength. Some GP CCs discussed how they had learned from non-GP CCs about community services and the non-medical needs of their participants at these meetings. One GP described how they now viewed the participants as a special group because as CCs they were expected to know more about their patients than they would have in their normal practice.⁴² The deleterious side of these learning opportunities has been to reinforce negative perceptions about GPs held by non-GP CCs.

4.3 f Assessment

A goal of Linked Care was to minimise duplication of client assessment between referring agencies. No additional assessment procedures were designed specifically for CCs as it was assumed that the information would be available from existing service provider records.⁴³ When Linked Care instruments were designed, they took account of compatibility with the standard HACC instrument under development, the Client Information Assessment and Referral Record (CIARR).

A NSW HACC discussion paper promotes the use of the CIARR as one means to develop seamless service provision and greater communication between services.⁴⁴ Linked Care was also interested to locate its care plan and communication booklet at the participant's home with the CIARR 'Yellow Book' which documents all relevant care information.

Although Linked Care had the capacity to print off CIARR reports, this facility was not used well by CCs or service providers. It was reported that only the full-time CCs used the facility when making a referral, such as respite care. Other GP and non-GP CCs did not

⁴² PSG meeting 19 May 1999.

⁴³ In fact service provider baseline investigations by the evaluators revealed few standard procedures for assessing and recording client information (UNSW Evaluation Consortium, 1999c).

⁴⁴ Ageing and Disability Department and HACC, 1998, *Community Care Assessment in NSW: A Framework for the Future*, Agency Printing, Sydney: 37-39.

request a CIARR print off.⁴⁵ This was probably a reflection of the early stages of use and acceptance by the local agencies of the CIARR,⁴⁶ although some of the agencies were already using it before Linked Care began (MFC, HCS and Neighbour Aid).

Table 4.18 shows results from the mid and end of trial CC questionnaires. These results show that CC views did not change significantly over the trial period with respect to the trial causing problems or not causing problems in coordinating and planning care. However, they also show that approximately 16 to 20 percent of CCs thought the trial caused these problems throughout the trial.

**Table 4.18: Care Coordinators Views of Linked Care, 1998 and 1999:
Coordinating and planning care**

	1998		1999	
	n	%	n	%
Trial created problems in coordinating and planning care				
Yes	7	15.9	9	19.6
No	38	86.4	37	80.4

It appears therefore that although Linked Care CCs did not add to the assessment burden for clients and service providers, they did not necessarily utilise existing assessment and client information recording mechanisms. This could also be at least part of the reason why some CCs considered that Linked Care caused problems in coordinating and planning care.

Service provider managers were also asked whether or not the trial had created problems in organising and coordinating care for individual clients at the end of the trial. Of the six surveyed, two answered 'yes' and four answered 'no'. One manager commented that the expectations of level of service by some CCs had caused difficulties for service coordinators of the agency.

4.3 g Results from the Care Coordination Mechanisms

Linked Care successfully implemented a model of care coordination. The process of designing and implementing the model took longer than anticipated because like other parts of Linked Care, it was important to manage the relationships with all partners involved in the care coordination process. The following list includes the essential elements of the model:

- ? care coordination was subcontracted to agencies and GPs;
- ? CCs were drawn from a range of disciplines. This applied within the same agency;

⁴⁵ Staff interview 22 February 2000.

⁴⁶ HCS representatives explained that the CIARR has met with resistance from service providers unwilling to undertake further paper work. Linked Care may similarly find resistance as it has with the current care plan.

- ? care plans were data entered by Linked Care administration, including a quality check procedure;
- ? care plans were reviewed quarterly;
- ? medical and general health and community care needs were incorporated into a single care plan; and
- ? training, support and financial decision-making were provided through Peer Support Groups.

Variations to the model emerged over the trial. A specialist role of CC developed within three subcontracting agencies, with two agencies handing most care coordination over to one or two staff. The number of GP CCs reduced by 50 per cent as the CC role became more defined and as their patients left Linked Care.

The role of care coordination continued to develop throughout the trial. Initially, service providers considered it was a role that they already undertook in their service delivery and clinical practice. It became apparent to many of them that Linked Care differed from their previous work within a professionally prescribed model. They found writing care plans complex, challenging and time consuming. Some have concluded that all needs cannot be identified and addressed in one care plan period. Rather care coordination was an incremental task that developed as care plans were reviewed over time. They were not all convinced that writing a care plan was a useful process.

The effectiveness of the Linked Care model of care coordination can be assessed by looking at it as an example of case management. Theoretical benefits and shortcomings of case management models are summarised in Table 3.28 and discussed in relation to the Linked Care experience.

It appears that the Linked Care model measured well against these limitations to case management when it came to the impact on costs of and access to care for participants, probably because of combination of the care coordination mechanism with the operation of the fund pool. However, the limits to participant focus, bureaucratic ease and low transaction costs were not so positive. It could be said that Linked Care focused on establishing an operational model in this short trial from which to take these experiential lessons about the limitations to a simple, if bureaucratic, model.

General results and difficulties experienced in the Linked Care model of care coordination are presented in Table 4.19.

Table 4.19: Results from the Care Coordination Mechanisms

Intervention	Results
1. Subcontracted CCs	Full-time CCs were more likely to fulfil obligations (see the remainder of the table for details). The goal of supplementing existing service provision through subcontracting was weakened by some non-GP CCs having no former relationship with participants, due to agency practices such as the method of allocating participants, staff turnover and the appointment of full-time CCs.
2. Care coordination process	Having a CC was associated with increased participant access to and use of services. This seemed to be dependent on the initiative of the CC and access to the fund pool rather than the preparation of a care plan.
3. Care plans	Some participants found it useful to have the list of services on the care plan e.g. to give to other providers, listing medications. Neither CCs nor Linked Care fulfilled their tasks in a prompt manner. The IT system hindered the process. Participants were not always involved in preparing care plans or received a copy of them.
4. Peer Support Groups	Attendance was poor. CCs with fewer participants were less likely to attend. The multidisciplinary forum was effective for information exchange.
5. Assessment	Existing common records and referral systems could not be accessed or were not effectively used. Prior assessments did not appear to be accessed by CCs. Inadequate service provider infrastructure (e.g. incompatible information or computer systems) and a restricted culture of written information exchange may be explanations for this.

Procedural suggestions to improve the model of care coordination identified by CCs included the following.⁴⁷

- ? Not all participants needed quarterly care plan reviews. A stand-by category with telephone support to check their stability and to wait for their calls about changed needs would be sufficient for some participants. They described these participants as those who knew where to go for help once they have been informed; were alert and assertive; had a GP knowledgeable about community services; may have come through a crisis and

⁴⁷ Full-time CCs interview 6 May 1999.

were now stable; and may still receive maintenance services that appear to be meeting their needs.

- ? A neutral, community location for CCs may overcome some of the professional misunderstandings between providers e.g. Community Health Centres.
- ? Mindful of the critical role of GPs, effective relationships with GPs could be improved by allocating CCs to an area with a certain number of GPs. This could encourage GPs to refer to the CC and build up an understanding of each other's role and interaction with a broader range of services.
- ? An alternative to paperwork would be direct access to an interactive computer system to maximise the likelihood of up to date service usage data; eliminate the care plan data entry delay; and provide detailed information resources.

4.4 Linked Care Initiatives

Linked Care was not specifically designed as a clinical intervention to address the needs of participants with particular diagnoses. Rather participants were recruited according to the complexity of their care. Nevertheless, in the context of this general trial, some specific initiatives were planned to enhance participant well-being, prevent deterioration in their health and to facilitate the service substitution strategies listed in the previous section. These included: use of clinical reminder lists; reviews of medication; changes to hospital admission communication; the convening of a working party to explore flexible ways of providing hospital services; and the use of hip protectors.

The development of specific Linked Care initiatives was for a large part, the result of initiatives discussed with the local Division of General Practice. In February 1999, after the election of new board members and new nominations to Linked Care working parties, the Board gave its strongest statement of support for Linked Care. A Clinical Advisory Group of five GPs and a Liaison Committee to inform the board were established, supported by a Division project officer. Unfortunately it was probably too late in the trial to make significant progress with the initiatives discussed below.

Other important initiatives were instigated by Linked Care management following encouragement by other stakeholders, as discussed below.

4.4 a Clinical and Service Delivery Prompt Sheets

When the Coordinated Care Trials were being established, it was envisaged that trials would develop protocols for managing the care of groups of participants with similar needs. Linked Care contracted the Family Medicine Research Unit at the University of Sydney to derive and analyse a clinical profile for the enrolled participants based on the medical and pharmaceutical data from HIC. The morbidity profile was formed from the data on the first 381 Intervention participants.

Six target diagnosis groups based on the pharmaceutical data were identified as having a high cost and a high frequency.

1. Cardiovascular disease – hypertension and heart failure
2. Psychological – insomnia, depression and anxiety
3. Upper Gastrointestinal disease – GORD and ulcers
4. Musculoskeletal disease – arthritis and osteoarthritis
5. Respiratory – asthma, COPD, emphysema and chronic bronchitis
6. Diabetes

The data did not identify diabetes as significant in this group of participants but the researchers and trial management agreed that it was likely to be significant given the participant demographic profile.⁴⁸

⁴⁸ Analysing medication data also failed to identify other groups such as dementia as being significant, presumably because medication use is low for these diagnosis groups.

It was planned that the profile would be used at the baseline by Linked Care administration and Division of General Practice to split the Intervention group into subgroups and to design intervention strategies as prompts to CCs and GPs.

From the experience of the Division and other trials, the success of prompt sheets and protocols seemed to rely on local input into their design. With this in mind, Linked Care considered adopting the protocols designed by the local Division of General Practice. These included diabetes and heart disease protocols. A draft diabetes prompt sheet prepared by the Division and Linked Care was distributed for consultation with GPs through the Division of General Practice.

However, CCs and GPs at the mid-trial workshop were wary of developing best practice protocols in the context of Linked Care. Complexities they saw were the multiple diagnoses of most participants, the emphasis on community-based care rather than medical interventions and the relevance to the local context.

Linked Care reported that the Clinical Advisory Group (Section 4.4b) considered protocols were still a useful tool by if they were locally developed.⁴⁹ The Group developed eight one-page reminder lists for use in general practice and by other service providers for patients with or at risk of particular diagnoses. They would be distributed to GPs for participants with care plans that included the diagnosis or were at risk of acquiring it. The first two completed were cognitive impairment and impaired mobility. The lists not completed related to depression and anxiety, and cardiovascular disease.

The potential use of these sheets was discussed in PSG meetings. There was general concern about adding more paperwork to Linked Care. The evaluator observed contrasting reactions from GPs. Some GPs thought the sheets might be useful reminders but they might not result in any changes to current practice. Other GPs were less positive saying that they would be affronted to receive such material because it was information GPs should already know. Some non-GP CCs agreed. They said they already had enough difficulty communicating with the GPs about their participants. By handing over a reminder list to which the GP might take offence they could potentially aggravate the relationships further. On the other hand, a non-GP CC noted that they found it helpful to use similar sheets to orient new staff. The Clinical Advisory Group agreed that for the strategy to be successfully received would require an extensive prior explanation to GPs.

The CCs thought that booklets given to patients and already produced by government organisations on subjects such as falls (booklet provided at meeting) were potentially more useful. They queried whether producing information sheets was the best use of Linked Care's resources.

4.4 b Clinical Advisory Group

The second focus of the Linked Care initiatives was the development of methods of promoting quality practice and reducing costs through the Division of General Practice. GP and Linked Care reservations about drafting best practice guidelines were discussed above.

⁴⁹ Linked Care report, March 2000.

In the second half of the trial, the Division and Linked Care shifted from the development of prompt sheets and protocols toward more general methods of reinforcing quality practice among GPs through the newly formed Clinical Advisory Group. Areas of interest included diagnoses, admissions to public hospitals, drugs dispensed, consultations provided and patterns of diagnostic tests ordered and provided.

The Clinical Advisory Group was requested to assist Linked Care to identify:

- ? the best method of reinforcing quality practice among the Division's GPs (and other service providers) in the management of those conditions seen most frequently within the Linked Care cohort;
- ? admissions which had the best potential for management at home and which could be avoided; they were asked to advise Linked Care on the mechanisms that could be used to avoid these admissions;
- ? mechanisms that could minimise the cost of pharmaceuticals to Linked Care; and
- ? strategies for dealing with frequent presentation and delayed presentation for review, and the frequency of home visits relative to surgery visits and justification on the basis of cost efficiency.

The operational objectives of the Group differed from this list. While the Group did not find answers to these questions during the life of Linked Care, it generated considerable debate in a number of clinical areas among GPs, improving the working relationship with Linked Care and completing the clinical reminder sheets discussed above.

The second group convened by the Division, the Liaison Committee, met as needed to discuss liaison and policy issues, and project initiatives proposed by Linked Care relevant to the Division. Its aim was to facilitate better information flow to the Division Board and consultation about the future of Linked Care. Most issues submitted to this working group were successfully resolved over time.

4.4 c Medication Review

Linked Care adopted a model of medication review, Patient Medication Management Service (PMMS), developed for two other trials in collaboration with the Faculty of Pharmacy, University of Sydney and the Pharmacy Guild of Australia.⁵⁰

Goals of introducing the PMMS were to reduce PBS costs, better manage medical needs and reduce the risk of illness from inappropriate or over-medication. Initial tracking data analysis in Linked Care revealed that less than six per cent of participants consumed 21 per cent of PBS resources from the fund pool. Linked Care administration identified 80 participants who were high users of medication according to agreed criteria for PMMS (over four medications and high PBS expenditure) and a review was to be undertaken by an accredited pharmacist, with the consent of the GP and the participant.

⁵⁰ The Guild received a grant from CDHAC as part of the coordinated care program. The Guild provided Linked Care with a small grant to undertake reviews.

At the request of the Division of General Practice, GPs planned to review half the participants identified for medication reviews.⁵¹ The Division specified that it would undertake what it called ‘peer reviews of medication’, not PMMS (a particular process) or medication reviews. They finalised how they would conduct the peer reviews mid-way through 1999. They completed 12 reviews but did not evaluate the outcomes.

The PMMS enrolment process was to contact the GP and ask permission to conduct the review on their patient. Permission was then sought from the participant, who was then allocated to a pharmacist specially trained to conduct PMMS. The PMMS consisted of three parts. An initial interview with the patient was written up as a report and sent to Sydney University to be checked, then a copy was sent to the GP. A second interview was then conducted with the patient after two weeks to see if any changes occurred. A three month follow up interview completed the process.

The implementation process was slower than expected, partly due to a lack of available pharmacists. Linked Care held an information meeting with 12 of the 18 accredited community pharmacists in the area to randomly allocate reviews. Nineteen undertook reviews and six actually completed them. Linked Care management explored ways to improve the review rate for the second half of Linked Care, including a higher payment to the pharmacist. Linked Care appointed a Pharmacist Liaison Officer one day per week to improve the functioning of the process (e.g. formalised agreements between each of the parties, re-enrolled pharmacists and arranged clinical support for the pharmacists from the University of Sydney).

With additional funding from the Pharmacy Guild, Linked Care aimed to complete 150 PMMS and 60 GP Peer Reviews, but fell short of this target, as summarised in Table 4.20. Some participants did not feel comfortable in having their medications reviewed and felt that the doctor would be under scrutiny. More participants than doctors denied consent for this process to take place. Due to the length of the process and the fact that pharmacists had other large workloads the completion rate was small compared to the number of participants identified.

Table 4.20: Medication Reviews Summary

Status of the medication review	Participants	Total
GP denied permission to proceed	17	
Participant denied permission to proceed	39	
Participant exited before completion	19	
Allocated to pharmacist but not completed	38	
Allocated to GP Peer Review but not completed	49	
<i>Total unable to complete</i>		162
PMMS completed	57	
GP Peer Review completed	12	
<i>Total completed</i>		69

⁵¹ This was then revised to 50 participants.

The Faculty of Pharmacy analysed the outcomes of the PMMS only for the reviews that were completed (all three interviews). No significant changes were observed. The Faculty of Pharmacy had hoped to analyse the GP peer reviews, but the proposed design by the GPs became too divergent from the PMMS.

Results from the Faculty of Pharmacy analysis are included in the following box. They relate to the three Coordinated Care Trials that adopted PMMS (completed PMMS numbers were Linked Care = 57, Care 21 = 65 and Care Plus = 16).

Summary of the PMMS Analysis

Clinical benefits

The most common clinical findings made by pharmacist conducting the PMMS in CCTs were: no diagnosis for a particular medication documented in the care plan, side effects or adverse drug reactions, lack of or low therapeutic response, drug/drug or drug/food interactions, sub optimal medication for a particular condition, the patient having ceased a medication or altered the regime, missing therapy for a documented condition, over use of medications, the patient forgetting to take medications, and sub optimal dosage time for a particular medication.

Pharmacists made recommendations related to each of these findings. In Linked Care 181 recommendations were made by the pharmacists. Of those, 16 per cent (29) were accepted by the GPs. Clinical outcomes flowing from those recommendations were: 16.6 per cent of patients experienced improvement in symptoms associated with pharmacist recommendations, 3.6 per cent experienced an improvement in side effects and adverse drug reactions, and less than 3 per cent experienced no change or worsening of symptoms over the trial period.

Use of the health care system

MBS data were used to assess the number of health care system contacts per patient per month. Health care system contacts included all items with an MBS code, covering such things as GP visits, pathology tests, scans, and outpatient treatments for example. This data showed a trend to decreased health care system contacts after the PMMS service, but this trend did not reach statistical significance. The values decreased from a mean of 5.32 \pm 0.61 health care contacts per month to a mean of 4.94 \pm 0.33 health care contacts per month.

Due to the unavailability of data, a trial set of patients was selected for the purposes of analysing GP visit changes. A random selection of trial site & PMMS patients within that trial site was made. There was a trend towards reduction in the frequency of GP visits post service, but this trend did not reach significance. The decrease in GP visits per month was from a mean of 2.72 \pm 0.33 to a monthly mean of 2.41 \pm 0.33 GP visits.

While there is a trend for reduction in MBS costs, it does not reach statistical significance. The over all range in monthly MBS costs before the PMMS service is \$49.28 to \$2069.30, and post service the range is from \$28.07 to \$5055.80, while total sample size was 49 patients.

Medication use

Prescribed medication numbers in each individual site do show a trend towards reduction after the PMMS service, but this reduction is not statistically significant. The over all prescribed medications decreased from a pre-PMMS mean of 10.61 \pm 0.58 to a post PMMS mean of 10.47 \pm 0.55 per patient. The decrease in prescribed medications is closest to reaching statistical significance at the Linked Card site (P 0.070,33 df). The man number of OTC medications remains steady throughout the service at all sites.

An over all trend for reduction in the number of total medications can be seen, and while the change between pre service and post service values is approaching significance, it does not reach it (in paired-sample t-test, P 0.085, 103 df).

Changes in medication cost were classified into changes resulting from pharmacist recommendations, and other changes. Pharmacist initiated changes, showed a statistically significant reduction in monthly medication costs (prescription and OTC) over the course of the PMMS (P 0.018,87 df).

Over the course of the PMMS, the cost of medications dropped from a mean of \$236.91 to a mean of \$221.57 per patient per month, which is a saving of \$15.34 on average per patient per month. Pharmacist recommendations and actions achieved an annual decrease in medication costs of \$25403.04 across the 138 patients receiving a PMMS in the Coordinated Care Trials. This was equal to an annual saving of \$184.08 per patient.

The changes in monthly total medication cost (prescription and OTC) unrelated to pharmacist recommendations or actions showed a trend to increase which did not reach statistical significance. The means changed from \$229.13 \pm \$35.32 per patient per month before the PMMS, to \$235.61 \pm \$36.51 per patient per month after the PMMS.

(Benrimoj et al, 1999)

At the mid-trial GP focus group, some GPs reported they had experienced difficulty with the PMMS, with their patients finding them intrusive and confusing. Most of the GPs felt that these should be conducted by GPs only. This result should probably be read with caution given that less than 20 PMMS had actually been conducted at that stage and that only eleven GPs attended the focus group.

It would be useful in future to assess whether a secondary intervention such as medication reviews, paid for by the fund pool, were successfully adopted by CCs and medical practitioners and whether they produced any significant cost savings to the fund pool and improved health outcomes for participants.

The model of the Coordinated Care Trials constrains the degree of intervention available to Linked Care management in relation to any findings from the PMMS, other models of pharmaceutical review or from other analysis of medication data. Irrespective of the findings, Linked Care is only ever in a position to present the information to the prescribing practitioners, rather than having the jurisdiction to compel any change in medical practice. Similarly, Linked Care must abide by Medicare rules to pay for all treatments claimed by medical practitioners.

Irrespective of the effectiveness of these formal medication review mechanisms, it appears that indirectly Linked Care had the effect of decreasing the use of PBS services in the Intervention area relative to the Control area (Section 5.4 and Appendix 5).⁵² Explanations could include that GPs were aware that the PBS levels were being monitored by Linked Care through the medical care plans and service usage data collection.

Other opportunities for Linked Care feedback to GPs and the Division about pharmaceutical service usage patterns were introduced by the administration at an elementary level during the trial. The potential efficacy of these broader information mechanisms were planned to be acted on in the next stage of the trial.

4.4 d Hospitals Notification System

Linked Care established a system of communication for when a participant was admitted to the public hospitals Hornsby Ku-ring-gai, Royal North Shore or Ryde, and one private hospital, Sydney Adventist Hospital (SAH). The hospitals informed Linked Care staff, who notified the CCs of any admissions. CCs commented favourably on this process because it enabled them to plan and cancel other services, facilitate discharge, as well as potentially reduce the length of stay and organise additional services if required.

The SAH, like the two private health insurers in Linked Care, was interested in exploring new partnerships and ways of managing inpatient admissions. It is a large private hospital with an accident and emergency service, so it receives unplanned admissions. The addition of the private hospital to the implemented strategy was a logical next stage for Linked Care.

CCs also suggested enhancements to improve the hospital notification practice, that were not implemented during the trial. They suggested that: Linked Care negotiate similar arrangements with other hospitals especially the other large public hospital, Westmead; the

⁵² Also PBS data analysis conducted by Linked Care, May 1999.

hospitals inform CCs about imminent discharge; and the CCs fax a copy of the care plan to the hospital.

Linked Care also intended to develop a priority list of participants so that they could check that the CCs had acted on the admission notification. This was rejected as too ambitious for the timeframe of the trial. Therefore whether CCs acted on the notification information was independent of any Linked Care scrutiny. CCs were reported to be inconsistent as to whether they did act on it; as were the discharge planners in notifying the CCs as to discharge plans.⁵³ Greater development work with the hospital staff would be required to make the strategy more effective in the future of Linked Care.

CC involvement in discharge planning was seen as an effective strategy in the experience of full-time CCs because they knew the participant and family as well as the range of community-based services to assist in the discharge. On admission, they faxed the care plan to the discharge planner. The discharge planner was reported as often not responsive, maybe because they were more focused on tasks such as finding alternative beds, tending to make them more impersonal in their dealings with participants. There was sometimes a better response from the NUM or Social Worker who were more likely to know the participant.⁵⁴

4.4 e Hospital Issues Working Party

A more general initiative was the formation of the Hospital Issues Working Party.⁵⁵ This working party was formed to examine if improvements could be made to the admission, length of stay and separation of persons admitted to the rehabilitation ward of HKHCHS. Admission for DRG 941 (rehabilitation) was the most frequent reason for admission for Linked Care participants.⁵⁶ The experience with the Control group was reported to be the same.

In recognition of the limitations the AN-DRG coding for sub-acute and non-acute episodes of care, HKHCHS was one of the pilot sites for testing SNAP. However the data were only provided to Linked Care as AN-DRG. It would appear that the participants within this rehabilitation group had a wide range of diagnoses and disabilities. It was hoped that with alternative and flexible use of funds available in Linked Care some of these participants could have been cared for differently.

The Working Party was formed to examine the diagnoses and disabilities of this group, if appropriate identify sub-groups within the DRG and recommend good practice guidelines. The terms of reference were to:

1. examine the participant inpatient events which have been coded as 'rehabilitation' and identify sub-groups within this DRG where possible;

⁵³ PSG Summary May 1999.

⁵⁴ Full-time CCs interview 6 May 1999.

⁵⁵ Initially the Rehabilitation Working Group.

⁵⁶ An analysis by Linked Care of the inpatient episodes of trial participants showed that between January and October 1998 the most frequent inpatient event was 'Rehabilitation' AN-DRG 941, accounting for \$566400 of inpatient care, more than ten times the cost of the next most expensive DRG.

2. select, sub-groups where opportunities may exist to provide improved care, substitute care or more appropriate care either as an inpatient or non-inpatient;
3. examine opportunities for reducing length of stay for the group as a whole or one of the sub-groups;
4. canvass the views of the Rehabilitation and Aged Care Service on what aspects of the health and community care services could be substituted or improved for this group;
5. pursue other lines of inquiry that may result in reduced length of inpatient stay or avoid hospital admission; and
6. make recommendations to the management of Linked Care.

Data obtained from the NSAHS suggested that participants in the Intervention group were more likely to be discharged home and less likely to be transferred to a nursing home than all other patients admitted for rehabilitation in the NSAHS (five hospitals).

An incidental goal from the hospital notification described above was to avoid last minute discharges, such as on Fridays. If the hospital notification strategies were effective, arrangements for services after discharge would already have been made in advance. CCs also had authority to purchase additional services until other arrangements could be made if an unexpected discharge was made.⁵⁷ The working party also addressed the adequacy of hospital discharge planning on Friday afternoons for participants who require community support that may wait until Monday to be put into place. If community support had not been arranged, one strategy discussed was to leave Friday discharges to Sunday, which would see only a one-day delay in implementing services.

No strategies emerged from the working party that were acted upon. While a number of initiatives may be useful (such as more resources in the rehabilitation discharge team, improved accident and emergency-community interface, and early discharge programs), none of these strategies would have been cost effective for the number of participants in Linked Care and the frequency with which they were admitted. Such strategies would only be cost effective if they were introduced for all patients in the hospitals. It is dubious then as to whether these types of strategies are relevant to a coordinated care trial, unless the participant population was a significant proportion of the total service population.

4.4 f Hip Protectors

An additional service substitution strategy was added near the end of the trial (August 1999): the use of hip protectors to prevent hip fractures due to falls. The strategy was reported by Linked Care staff to have been received well by CCs at PSG meetings because of the evidence presented about lower fracture rates in users. Nearly half the participants (189) were identified as being at high risk of sustaining a fractured hip. Sixteen participants consented to referral and five participants had good compliance. There were no reported falls or fractures among the 16 participants.

⁵⁷ Management Committee minutes 5 March 1999.

4.4 g Results from the Specific Linked Care Initiatives

The evaluation of the implementation of these initiatives remained one of examining the processes rather than outcomes. Their achievements appeared to be to reach recommendations for future practice. With such a short period between the implementation of the strategies and end of the trial it was not possible to observe any measurable impact on health and well-being or financial outcomes. Outcomes that were observed are summarised in Section 4.3. Other process results are summarised in Table 4.21.

Table 4.21: Results from Specific Linked Care Initiatives

Intervention	Results
1. Prompt sheets	GPs and CCs rejected best practice guidelines as inappropriate to clients with complex care needs and patronising to professional practitioners. Draft prompt sheets were greeted with ambivalence by GPs and CCs.
2. Clinical Advisory Group	Division representatives met regularly and developed prompt sheets.
3. Medication review	68 PMMS (29 per cent) were completed. The PMMS process was hampered by resistance from GPs and participants and insufficient incentives to pharmacists to participate until financial returns were increased. No significant changes to pharmaceutical use were measured. The Division did not design a GP peer review that could evaluate outcomes and too few were undertaken to evaluate the process.
4. Liaison with hospitals	CCs and hospitals embraced the process as positive. Incremental changes to increase its effectiveness were identified. Limitations were that the system relied on cooperation between discharge planners and CCs, which was not achieved in all cases. Some CCs acted on the admission data to adjust care arrangements and some admissions did not need follow up by CCs.
5. Hospital Issues Working Party	Issues were discussed but the number of Linked Care participant admissions was too small to justify resource investment.
6. Hip protectors	The initiative was implemented in the last quarter of the trial, too late to measure the impact (few referrals and the number of participants was too small to observe fall-related injury prevention).

Several of the process lessons concerned the liaison with the Division of General Practice. The Division appeared slow to engage in the opportunity to improve service delivery through mechanisms offered by Linked Care. Their participation on working groups was sporadic

and did not appear to be consistently relayed to other members of the Division. As a result it seemed difficult to reach decisions or pilot suggestions. Consequently initiatives remained largely at the discussion level.

5. Service Providers Experience of the Impact on Clients

5.1 Client Outcomes

At the start of Linked Care, on balance both health and community care service providers seemed to be of the view that participants would benefit from Linked Care. The possible threats to participants were short-term administrative issues, such as recruitment, that had already been resolved by Linked Care. They identified a potential negative impact on access to care by non-participants because of capped budgets.

At the mid-trial strategic planning and care coordination workshops in November 1998, service provider managers and CCs were asked to complete questionnaires about the impact of Linked Care so far, including their opinions about the impact on clients.⁵⁸

Even at this early stage, some CCs reported improvements in the health and well-being of the clients for whom they were coordinators. However, and as previously discussed, by the end of the trial there had been significant changes in CC views concerning the health and well being of their participating clients.

The proportion of CCs who thought Linked Care had affected the health and well-being of their participants in a positive way did not change markedly from mid-trial to end of trial, perhaps indicating those who were committed to Linked Care and believed it was of benefit remained so throughout. Whereas no CCs surveyed thought Linked Care was having an adverse effect on the health and well-being of their participants mid-trial a very small proportion (two per cent) believed this to be the case by the end of the trial. Just over half of the CCs surveyed at mid-trial believed Linked Care was not affecting the health and well-being of their participants. This had grown to 65 per cent by the end of the trial. While a little over 10 per cent of CCs could not answer the question at mid-trial, everyone could make an assessment of the impact of Linked Care on the health and well-being of their participants by the end of the trial.

Of the six service managers answering the service manager questionnaire at end of trial, one agreed with the statement that the trial had affected the health and well-being of trial clients in a positive way. Three responded that there was no change in trial clients health and well-being while two did not know.

Many CCs were of the opinion that Linked Care was most beneficial to selected clients (43 per cent of CCs surveyed at mid-trial held this view), particularly those with complex care needs or those who, for a variety of reasons, had not been able to negotiate access to care. By the end of the trial a higher proportion of CCs (57 percent) were of the opinion that the trial was more beneficial for some types of clients than others. This change was not, however, statistically significant. Comments made by CCs at the end of the trial supported the mid-trial view that clients who benefited most from the trial were those with complex care needs, or clients who were previously unaware of, or unable to access, some services.

⁵⁸ CC mid-trial questionnaire.

It also appeared that at mid-trial, 44 per cent of CCs agreed that care coordination had enhanced client control over choosing care. While not statistically significant, this number had dropped to 38 per cent by end of trial. Reflecting this trend, all six service managers answering the end of trial service manager questionnaire responded that the trial had not enhanced clients' control over choosing care. At mid-trial most CCs (65 per cent) were using strategies to improve client participation in the care planning process, but this number had dropped to 56 percent by the end of trial. Similarly CCs not using strategies to improve client participation had risen from 28 per cent mid-trial to 41 per cent at the end of the trial.

GPs also felt that some patients had improved access to some services such as respite care and that it had enabled some patients to be managed at home and delayed (rather than prevented) admission to nursing homes. However others had patients whose access to care had been limited, for example, to Home Care Services.⁵⁹

Comments were made by service provider managers about the impact on clients. In summary, there was agreement that clients were benefiting from extra access to services, but that this was also having a negative impact on non-participating clients, because of capped resources and difficulty recruiting staff. They did not consider that the additional access to care could be maintained if all clients had access to the same level of service.

5.2 Impact on Clients not in Linked Care

One of the objectives of the trials was to implement the intervention without disadvantaging non-participants. There appeared to be four ways that clients outside Linked Care could have been disadvantaged:

- ? if the infrastructure of a service provider was insufficiently flexible to be able to use the reimbursement from the Linked Care fund pool to increase the total hours of care provided by that agency, e.g. to employ additional staff;
- ? if payments to the service provider from the fund pool were not transferred to the branch so the cost of the additional care to participants was at least partly funded from a branch budget;
- ? if the payment for CCs was insufficient to cover the cost of employing them; or
- ? if the cost of service used to calculate capitation rates and service payments was inaccurate and did not cover the cost of care.

It was unclear to the evaluators the extent to which these four risks were avoided. Certainly a concern about inequity between clients in and outside Linked Care was expressed throughout the second half of the trial in 1999, particularly in relation to accessing assistance from Home Care Services (HCS), the largest HACC service provider.⁶⁰ It was reported that if a participant had a change of circumstance requiring access to HCS they were able to

⁵⁹ GP mid-trial focus group.

⁶⁰ From managers of service providers contributing to the trial, other service providers, CCs and reportedly from field staff at HCS.

access that care, compared to other potential clients who could not because HCS personal care was reportedly capped since August 1998, and that it was reducing the care available to non-participants.⁶¹

At the baseline, all service providers feared Linked Care could be detrimental to clients outside Linked Care, if resources and care provided were capped and the effect was to allocate a significant proportion of care to participants.⁶²

CCs were also negative in their views. Over half thought there had been a negative impact on clients outside Linked Care (51.1 per cent; Table A8.1). Comments supporting this result described the negative impact on access to services for non-participants because of capped resources.⁶³

At mid-trial there was little consensus from CCs over the impact of Linked Care on non-participants, although on average it appears they were slightly negative in their views. Results from the CC questionnaires show that while CCs agreeing with the statement 'Trial had more benefits than disadvantages for other clients' remained the same mid to end of trial (13 – 14 per cent), and CCs remaining neutral dropped from 55 to 36 per cent from mid to end of trial, CCs disagreeing rose from 31 per cent to 51 per cent from mid to end of trial. Comments supporting this result described the negative impact on access to services for non-participants because of capped resources.⁶⁴ The service provider managers reached similar conclusions as discussed above, and as expressed in the service managers end of trial questionnaire (all six managers surveyed disagreed that the trial had more benefits than disadvantages for their clients not participating).

This has aggravated a negative attitude towards Linked Care because of providers' frustration about the shortage of care for non-clients from the HCS. Whether or not non-participants have actually been disadvantaged by Linked Care, the perceived inequity appeared to create resentment towards Linked Care and its participants.

Linked Care appeared to facilitate more rapid entry to services, as two service personnel commented at the end of the trial.⁶⁵ However, several service personnel were also concerned about the inequity this situation created, as one person remarks '[a] bigger pool of finances to provide more services and equipment for patients in the Linked Care trial, to the detriment of patients not part of Linked Care – unfair distribution. Every patient in Northern Area Health should have equal access.'

Repercussions from perceptions by service staff of an inequity between clients in and out of the trial could be a continuing issue for a model such as this, if the perception resulted in a detrimental attitude to participants. Additionally, the perceived inequity could have created resentment towards Linked Care and its participants. A result might have been that providers were less willing to incorporate ideas from Linked Care in their service delivery

⁶¹ This is consistent with the increase in waiting list numbers for HCS and other service providers; Table A8.8a and A8.8b.

⁶² Service provider baseline interviews, December 1997.

⁶³ Service provider managers and CC mid-trial questionnaires; Table 4.14.

⁶⁴ CC mid-trial questionnaire.

⁶⁵ "Immediate service provision, no delays due to branch budgets." and "Those in the Linked Care trial received services more promptly e.g. HCS for which others have had to wait and one still waiting".

processes (e.g. using the CIARR to enhance referrals) or to comply with expectations from Linked Care (e.g. covering for CCs on leave, or attending PSG meetings).

Even if CC and service provider perceptions are perhaps a little more negative than the situation itself calls for, these observations should be of concern to Linked Care, particularly in the context of future trials, or the generalisability of the Linked Care model. As hypothesis 9 (Appendix 3) outlines, the success of Linked Care should not be to the detriment of other key areas of government policy – particularly equity of access for clients outside the trial.

It would seem that the expansion of the model would continue to pose these risks to clients outside coordinated care. Even if financial reimbursement was accurately calculated and transferred, with smaller agencies, rigidities such as the availability of suitable staff or volunteers could be present. Similarly, for larger organisations, industrial relations issues concerning temporary staff could restrict their ability to continue to provide the same level of care to other clients.⁶⁶

The evidence about the impact on non-participants was only sketchy. The implications from this limited analysis are that the Linked Care model could have been sustainable at a cost to clients outside the model. Second, greater provision of community and hospital-based services to a larger number of clients in this model may only have been possible if the flexibility of the structure of existing and possibly new service providers changed.

⁶⁶ Service provider manager baseline interviews.

6. Service Usage Patterns

6.1 a Data Collection Limitations

The evaluators maintained a close watch on the data collection process because of the implications for the evaluability of the service usage data. Choices were made by Linked Care administration to prioritise some data collection. Potentially therefore, there could be significant gaps in the data collected.

Linked Care restricted data collection to those agencies from which data were necessary, collectable and affordable. Data supplied by the fund pool contributors to establish an operational fund pool were the priority for Linked Care. The choice not to collect some service data appeared to be based on a combination of the following grounds:

- ? the data would need to be collected manually so the data might not be accurate and would have required intensive effort from Linked Care or service providers;
- ? the proportion of the fund pool that the service usage would represent was too small to warrant the investment in data collection; or
- ? the services were outside the fund pool or free.

The gaps in the service usage data areas included: inpatient services from private hospitals and other public hospitals outside the NSAHS (except data provided for MBF and HCF clients); non-inpatient services; accident and emergency services; other HACC services, client paid services and informal care.

Linked Care initially identified a wide range of agencies from which to collect data. These included small HACC agencies whose data management systems were not highly developed. Early in the development phase Linked Care decided to exclude small HACC agencies from fund pooling following a review by the North-East Metropolitan HACC Services Forum (Beatty, 1997). Data collection from these agencies then held a lower priority.

Electronic records were provided by the Health Insurance Commission; Department of Veteran Affairs; NSAHS; Northern Sydney Home Nursing Services; Home Care Services; Medical Benefits Fund (MBF); and Hospitals Contribution Fund (HCF).

Obtaining records from other health care providers was labour intensive and required the health services to be recorded in a hard copy format and entered manually into the Linked Care information system. Hard copy records were provided by: Mercy Family Centre; Wesley Gardens; and various smaller and private providers (Community Support Program; Home Help and Monitoring Program, Macquarie Nursing Agency, Epping Nursing Agency, TLC Nursing Agency, Kincare, Silver Circle, Elder Care, Baptist Community Services, private podiatry services, private physiotherapy services and PADP (equipment hire and purchase).

The quality of data manually collected and transferred was inconsistent. Of particular concern to the sponsor, the NSAHS, was public non-inpatient hospital services. It was anticipated by the sponsor that one of the outcomes from Linked Care would be substitution away from inpatient services towards other community-based hospital services. To account

for that substitution, services would need to be appropriately costed and measured during Linked Care. However, neither function adequately occurred during the trial.

From the point of view of evaluating the fund pool, this compromise was accommodated because these services represented only a small draw on the fund pool; or they are free or outside the fund pool. The lack of data was more problematic in analysing the substitution effects. Although these service providers were generally smaller than the fund pool contributors or were voluntary services, the cost to the fund pool, if the pool were to pay for or substitute this care, could be significant. A change in payments from the fund pool might have reflected an unmeasured change in use of free services or services paid for outside the fund pool.

A second limitation for evaluation of the data collection was the uneven collection between the participant groups. The most thorough collection was in relation to the Intervention participants because of the financial link to the fund pool. In contrast, services used by the geographical Control group were less thoroughly collected because of the lack of financial incentive for these organisations.

The third limitation was that the data collected might have been distorted because of possible differences associated with the geographical Control. The largest inconsistency between the participant groups was likely to be public inpatient hospital use outside the three NSAHS hospitals. It appears from initial examination of the inpatient data, that there was significant difference in inpatient service use that could be attributable to Control participants using out of area public hospitals and private hospital services.

There are many other specific limitations to the service usage and cost data set provided by Linked Care.

- ? Data lag of up to three months was known for some of the providers throughout the trial. For this reason the analysis was conducted on data up to the end of September 1999. Similarly, analysis begins for data from May 1998 when data collection was first adequately finalised for most service groups.⁶⁷
- ? Data capture for some participants was absent. For example, it is known that no data were received from HIC for at least 71 participants – affecting three service groups.⁶⁸

For further discussion see also Section 4.2 d Service Usage Data.

Supplementing Service Usage Data

The evaluation plan included multiple checks of the service usage data because of the evaluators' concerns about the completeness of the data collection. The evaluators planned to compare care plan data and participant questionnaire data with the service usage data collected by Linked Care.

⁶⁷ These data were subsequently updated for the national evaluation data set, completing a reasonably reliable data set to December 1999. Further analysis at the local level could include data from these valuable additional three months.

⁶⁸ Future analysis could include examination of the characteristics and exit status of these participants to determine the implications of the missing data.

Unfortunately the comprehensiveness of the care plans did not appear to be thorough enough to support the evaluation to the extent anticipated. The range of services and needs addressed by the care plans varied considerably between different CCs, for example as to whether they included medical needs, paid and voluntary community services, client paid services and caregiver tasks. As a comprehensive record of existing or likely future service use, the care plans were not accurate.

For the purposes of the evaluation, service data were also supplemented and checked for accuracy through the participant questionnaire and telephone interviews. A questionnaire rather than diary was chosen for reliability because of the characteristics of the participants.⁶⁹

The qualitative data were also needed to measure the impact of Linked Care on unpaid formal and informal care.⁷⁰ Service usage data on these types of care were not consistently included as part of the care plan or at all for financial management.

6.1 b Results from the Linked Care Data

A vast data set of service utilisation was generated by Linked Care. Analysis for this report has only begun to explore the implications of the data. Descriptions of service use and cost during the trial are presented in chart format in Appendix 5 of the Final Report.

Analysis was conducted of both service usage and cost according to the basic service groups defined by the national evaluators. These groups were: hospital inpatient services; hospital non-admitted patient services; Home and Community Care Services (HACC); diagnostic and investigational services; pharmaceutical services, medical and specialist services; and other goods and services (catch all other category, mainly private providers).⁷¹

Mean use and mean cost per month per participant in Linked Care were calculated for the period May 1998 to September 1999.⁷² In addition to the broad service groups listed above, charts are included for sub-groups of participants, services and funders: HACC providers, and DVA, MBF and HCF clients. Outliers have not been removed (further analysis should include this alternative description of the data).

As discussed in Chapter 4 of the Final Report, Linked Care did not appear to change the measured health outcomes of participants enrolled in Linked Care. Similarly, this chapter discusses the apparent absence of major shifts in use and cost of service types. The

⁶⁹ The Control area service providers were also resistant to a diary because of the confusion it would cause with the existing diary type systems in place in the area.

⁷⁰ Unpaid formal care included that provided by volunteers, voluntary agencies and self-help groups. Informal care included care by friends, relatives and household members.

⁷¹ Other service groups included in the national data set, but not in this analysis were nursing home or hostel services, non-MBS general or specialist medical services including coordinated care services, and services arising from the CCT context. Hospital non-admitted patient services data were charted, but not included in further analysis.

⁷² Three month moving averages were calculated to minimise irregular monthly variations. Data were successively averaged by adding values for the month in question, and the month preceding and following. This was then divided by a moving or rolling average of the number of participants for the corresponding period.

exceptions were possible increases in use and cost of medical practitioner and specialist services and changes in care provided by specific HACC agencies.

Participants and CCs reported that the model provided better monitoring, and that when combined with the financial flexibility of the fund pool, the model potentially increased access to, and use of, services. It is therefore not surprising that in the absence in a shift in service use, a possible increase in use was observed for some service types (e.g. community care).

Logistic regression was used to analyse changes in both service usage and cost according to the basic service groups.⁷³ Tables 6.1 and 6.2 show that increased use of medical practitioner and specialist services was more likely to be found (by a factor of 1.2) among Intervention participants than a decrease in use. This was also found for cost, although to a lesser degree. No significant differences between Intervention and Control groups were found regarding total cost of services.

Although the fund pool analysis showed some changes in total service use, this is not immediately evident in the current analysis, apart from medical practitioner and specialist services (Final Report, Chart A5.24). The results presented here, however, should be interpreted with some caution. First, the analysis only examines changes in cost and usage at two points in time (three-month averages for June 1998 and August 1999). Strictly speaking, the results only refer to changes between the means calculated for these two months. It should also be noted that the direction and strength of results is sensitive to and partly determined by which particular time periods are analysed, for example they may include winter seasonal effects in the end of trial month. Future research into the data, therefore, would utilise more sophisticated longitudinal techniques.

Further analysis on the relative change in service use of subgroups of service providers, service type, client type, CC type and service usage prior to exit is recommended. This would assist in identifying what client factors would predict changed use of services. Suggestions about the areas for further examination are included in the discussion below.

⁷³ Two sets of variables were created. The first represented baseline usage for the month of June 1998 calculated as a three-month average (May, June, July). A second set was created to capture change over time, that is, end of trial (August 1999 – average of July, August, September) minus baseline (June 1998). The comparison of different months risks seasonal effects, minimised through the use of a three-month average. This was repeated for cost of service use. The approach controlled for baseline (largely demographic, Section 4.2b) differences that had the potential to influence outcomes. This allowed for changes in the amount and cost of service use to be analysed in terms of the Intervention alone. The regression predicts that with a given outcome (e.g. cost of service), and controlling for background differences, the participant is or is not from the Intervention group.

Table 6.1: Logistic Regression of Intervention Group Membership and Change in Use of Each Service, June 1998 and August 1999

	Coefficient	SE	Sig	Effect on Odds
Background variables				
Born overseas	0.5685	0.2709	**	1.7657
English not spoken at home	-2.0615	0.4924	****	0.1273
Lives in independent living unit	1.3234	0.3877	****	3.7563
Has a carer	0.8904	0.2689	****	2.4361
Renter	-0.6379	0.2640	**	0.5284
Tertiary level education	1.5623	0.2901	****	4.7699
Service groups				
Hospital inpatient (non-DVA)	0.2662	0.3590		0.8001
DVA hospital inpatients	0.0167	0.0964		0.9835
HACC-based services	-0.0051	0.0074		1.0510
Diagnostic and investigational	-0.0196	0.0378		1.0198
Pharmaceutical	-0.0404	0.0279		1.0413
Medical practitioner and specialist services	-0.1885	0.0638	***	1.2075
Intercept	0.7527			
n = 669; -2 log likelihood 700				

** p<0.05 *** p<0.01 **** p<0.001

Reference category: Australian-born; English spoken at home; lives at home (unit, flat etc); does not need or have a carer; owns home; secondary education level.

Table 6.2: Logistic Regression of Intervention Group Membership and Change in Cost of Each Service, June 1998 and August 1999

	Coefficient	SE	Sig	Effect on Odds
Background variables				
Born overseas	0.5573	0.2693	**	1.7459
English not spoken at home	-2.0907	0.4880	****	0.1236
Lives in independent living unit	1.3516	0.3858	****	3.8635
Has a carer	0.8129	0.2667	***	2.2545
Renter	-0.6329	0.2610	**	0.5310
Tertiary level education	1.5832	0.2889	****	4.8704
Service groups				
Hospital inpatient (non-DVA)	-5.2E-05	6.9E-05		1.0001
DVA hospital inpatients	-0.0002	0.0003		1.0002
HACC-based services	-0.0001	0.0002		1.0001
Diagnostic and investigational	-1.5E-05	0.0012		1.0000
Pharmaceutical	-0.0011	0.0010		1.0011
Medical practitioner and specialist services	-0.0022	0.0009	**	1.0022
Intercept	0.9966			
n = 669; -2 log likelihood 707				

** p<0.05 *** p<0.01 **** p<0.001

Reference category: Australian-born; English spoken at home; lives at home (unit, flat etc); does not need or have a carer; owns home; secondary education level.

Hospital Inpatient Services

Hospital inpatient services included all private and public admissions to three of the public hospitals in the NSAHS: Ryde, Hornsby Ku-ring-gai and Royal North Shore. It did not include other public or private hospital admissions except as it related to the clients of the two contributing private health insurers, MBF and HCF.⁷⁴ Costs are 75 per cent of AN-DRG costs as supplied by the NSAHS (Section 4.2).⁷⁵

The pattern of average hospital inpatient service use and cost per participant in Linked Care began with higher recorded use and cost for the Intervention participants at the beginning of the trial (Final Report, Charts A5.1a and A5.1b, Appendix 5). This relative position remained throughout the trial, although the trends converged towards the end of the trial (the convergence could have been a trial effect or due to incomplete data collection in the last months). The higher baseline might be explained by either the impact of the geographical Control described above (Section 3.1a) or unmeasured differences in the severity and complexity of the health conditions of the participants.

Mean use and cost per participant decreased over time for both Intervention and Control group participants. Unlike the convergence between the Intervention and Control clients mentioned above, this appears to be due to an actual decrease in use (rather than a data capture problem), most likely explained by the survivor effect of the reducing participant groups over time.

The regression described above, revealed no significant difference in hospital inpatient service use or cost between Intervention and Control participants (Tables 6.1 and 6.2). Further analysis could examine length of stay patterns of usage.

Two of the substitution goals in Linked Care were to prevent hospitalisation and reduce length of hospital stay. Specific hospital service substitution strategies were implemented and others were explored by Linked Care, including the hospital notification system (Section 4.4d) and the convening of the Hospital Issues Working Party (Section 4.4e). Participants and CCs related stories of early discharge through intense home-based care arrangements. Other examples of avoiding admission, especially to hospital-based palliative care, were also reported. According to the full-time CCs, Linked Care seemed to be effective at providing services in the home to keep participants out of hospital or get them out early.⁷⁶ Palliative care was a good example of this, reportedly effective because it also coincided with the goals of those specialist care facilities, such as Neringah, a private palliative care hospital. However, the full-time CCs noted that it would take longer than two years to assess the

⁷⁴ Seventy-six records were dropped from the HIC and MBF/HCF data as duplicate private hospital admissions. They are included in the private insurance graphs.

⁷⁵ This was the fund pool contribution cost negotiated with the NSAHS. Hospital inpatient costs were estimated on 75 per cent AN-DRG, weighted by the three NSAHS hospitals included in the Trial, Hornsby Ku-ring-gai, Royal North Shore and Ryde Hospitals. AN-DRGs are one part of the total resource formula for calculating NSAHS resources. The NSAHS is funded on 80 per cent of AN-DRGs, and 20 per cent is retained by the Department of Health for capital grants and special purposes. A further discount of 5 per cent was agreed upon with the Trial to minimise the NSAHS exposure and to reflect their expected loss on substitution away from the NSAHS.

⁷⁶ Full-time CCs interview 6 May 1999.

effect on hospital admissions and health outcomes of earlier intervention of services, aids and equipment.

Two case studies were recorded by Linked Care staff as examples of successful early discharge and avoiding admission through the actions of the CC, in the words of Linked Care administration.

1. The participant was a 98 year old woman who lived with her grand daughter. She was alert and independent, engaging in social activities.

She was hospitalised in a private hospital following a fall in which she had fractured her pelvis. She was insistent that she be allowed to return home as early as possible and told the nursing staff that her CC would help. The hospital staff were concerned that she may be unsafe in her activities of daily living. She would require a walking frame, which she had used before the fall, but her balance was not as good as it had been before the fall.

The CC was able to organise nursing services, seven days a week, for personal care, to be reviewed once she was fully recovered. These arrangements enabled her to go home safely to where she wished to be. It is estimated that these services reduced her hospital stay by seven days.

2. Linked Care office received an anxious call from the brother of a participant to report that he had found him on the floor at 9.30 am and believed that he had been in that position all night. The participant is an 89 year old widower, a fiercely independent man who had refused to let his brother call either his doctor or an ambulance, but insisted that his Linked Care CC be called.

The CC was notified and able to visit soon after the telephone call. She persuaded him to be seen by his doctor. Although his GP would have preferred a hospital admission for investigations, he would not agree. It was advised that he should not be left alone overnight, so overnight emergency respite through Community Options was organised by the CC.

Hospital Non-inpatient Services

The data for non-inpatient services were manually collected and entered only for the purpose of the Linked Care trial. It was incomplete. Data were not available for the Control group. The charts of average non-inpatient service use and cost per Intervention participant show a decrease in service use and cost for the first eight months before it stabilises for the remainder of the trial (Final Report, Chart A5.2a and A5.2b). It is unlikely that the data reflect much beyond the adequacy of the data recording, as there is no explanation for a decrease or stabilisation in service use and cost.

Home and Community Care Services (HACC)

The data included in the HACC service group included all HACC fund pool contributors (Home Care Service, Northern Sydney Home Nursing Services, Mercy Family Centre), sample data from Meals on Wheels and Easy Care Gardening and other miscellaneous services provided by HACC agencies.

The Home Care Service data appeared to be a reasonably accurate reflection of service use and comparison between the Intervention and Control areas because they were extracted from the head office financial application. To achieve this, each branch of Home Care Services was required to ensure that each service record relating to a Linked Care participant was assigned to the Linked Care account number.

Throughout the trial, Linked Care and the Northern Sydney Home Nursing Service (NSHNS) invested considerable effort to overcome difficulties in transferring reliable data about service use due to a number of information technology changes at the NSNHS (new IT systems and personnel and an office relocation). It appears that by the end of the trial most of the problems were solved.⁷⁷

Mercy Family Centre (MFC) service data related to packages of care (COPs, CACP). No equivalent data were available from the Control area. Similarly the sample data for Meals on Wheels and Easy Care Gardening were only available for the Intervention area. These differences in the data set contribute to the difference in both the use and cost per participant between the Intervention and Control area, but the effect would be approximately constant.

The charts of average HACC service use and cost per Intervention participant show little change throughout the trial (Final Report, Charts A5.3a and A5.3b). This was also reflected in the regression analysis (Tables 6.1 and 6.2). The Intervention participants entered the trial with a considerably higher mean cost per participant (I=\$285, C=\$93) and roughly maintained that relative position during the trial (end of trial I=\$311, C=\$73). This is similar to the geographical differences in total use of HACC described in Section 3.1a (Tables 3.6 and 3.7).

Although as a group HACC service use and cost did not vary significantly, the service usage patterns were different for particular service providers. Charts of the service use and cost relating to the HACC fund pool partners to Linked Care (HCS, NSHNS, MFC) and the sample data from Meals on Wheels and Easy Care Gardening are included in Appendix 5 (Final Report, Charts A5.4a to A5.8b).⁷⁸

The HCS chart shows a distinct increasing trend in cost and service use for the Intervention participants, relative to their baseline position and relative to the Control participants (Final Report, Charts A5.4a and A5.4b). This was also reflected in participant and CC reports that Linked Care enabled them to use greater amounts of HCS care, both in terms of initially accessing care and increasing the amount and type of care they needed. Future analysis could include changes in the use of HCS home help and personal care, given the constraints on non-participants.

The NSHNS charts reveal the opposite trend (Final Report, Charts A5.5a and A5.5b). Participant service use and cost reduced throughout the trial, this time for both Intervention and Control participants. Like the inpatient service use, this might reflect a survivor effect, where the higher users of NSHNS care left the trial. The lack of relative change between the

⁷⁷ Linked Care developed a program in Microsoft Access to extract data from the NSHNS information system. Linked Care discovered in the middle of the trial that the data extract software was missing data when performing monthly extracts. All efforts to modify the program failed to solve the problem.

⁷⁸ The MFC, MOW and Easy Care Gardening data is presented as an average per participant who used the service rather than an average per Linked Care participant.

Intervention and Control group would tend to support this conclusion. A similar explanation might apply to the MFC and Easy Care Gardening charts (Final Report, Charts A5.6a to A5.7b), which decreased in average use and cost over the trial.

Further analysis could exclude HACC services that were not comparable between the Intervention and Control group data sets, such as the MFC data.

Diagnostic and Investigational Services

Intervention participants' diagnostic and investigational services (MBS categories 2, 5 and 6) use and cost did not appear to change either in relation to the baseline or relative to the Control participants (Final Report, Charts A5.9a and A5.9b). This might indicate that the application of care coordination did not spawn a proliferation of additional assessments, a risk of intensive case management.

Pharmaceutical Services

There were several idiosyncrasies with the PBS data transfer. They included HIC changes to the management of MBS and PBS data relating to participants who withdraw; the effect of the household safety net level; and a consistently low match on Medicare numbers.⁷⁹

The analysis of the use and cost of pharmaceutical services revealed little change between the Intervention and Control group participants over the life of the trial (Final Report, Charts A5.10a and A5.10b). Initial analysis of service usage data did not reveal any significant changes in either use or cost of PBS (Tables 6.1 and 6.2).

The pharmaceutical services group would be a particularly interesting data set to examine further given this was one of the few service groups with an apparent surplus after balancing contributions and payments from the fund pool.

Future analysis could also include examination by ATC code and the most frequently prescribed pharmaceuticals, to investigate changes in patterns of use over time. The sample of participants with diagnostic data (803) could be further examined in combination with the PBS data.

Linked Care implemented specific service substitution strategies to reduce pharmaceutical use (e.g. PMMS, medication reviews, reporting PBS data analysis to the Division of General Practice; Section 3.5). The lessons from designing and piloting these strategies might result in measurable changes in service use when applied more widely in future models of service substitution.

Medical and Specialist Services

The remaining MBS items, medical practitioner and specialist services (MBS Categories 1, 3, 4 and other) was the only service group that showed a significant difference in change of service use and cost between the Intervention and Control group participants (Final Report, Charts A5.11a and A5.11b, Tables 6.1 and 6.2). After controlling for demographic and other characteristics, it was found that increased use of services and increased costs were both more likely among the Intervention group than were decreased costs. More detailed analysis is required to further analyse the size of these effects and to determine if it was the

⁷⁹ This was despite Linked Care recording the participants' Medicare number with their usual pharmacist.

result of seasonal variation of the particular months chosen for the analysis. Further analysis could also separate the GP services from other medical and specialist services.

Although disappointing, this result was probably not unexpected. Several parts of the care coordination process encouraged an increase in medical and specialist service use. Participants were required to visit their GPs for care planning or to complete medical care plans on a regular basis and quarterly monitoring by a CC could be expected to precipitate early recognition of changes in medical need. Yet there were limited opportunities for Linked Care in a short trial with few and reducing numbers of participants to effectively implement strategies to counter this increase or reduce medical and specialist service use. A longer, more widespread trial, with continuing recruitment would be more likely to be able to design and implement service substitution strategies to address this opportunity for service reduction. The Phase II development for Linked Care is attempting to do that.

Other Goods and Services (Private Providers)

Data from multiple sources were included in this last catch all service group. Primarily the group included equipment, private providers and individual professionals such as private physiotherapy and podiatry services. Additional services approved by Linked Care to be paid from the fund pool were also generally included in this category (Section 4.2e). It does not include other private services paid for by participants. Nor is it an accurate collection of data from the Control participants.

The analysis of other goods and services shows an increase in use and cost toward the last third of the trial (Final Report, Charts A5.12a and A5.12b). Possible explanations could be that Linked Care exercised conservative financial management of the fund pool during the first year and that CCs were less familiar with making requests for additional services or using private providers until the end of the trial.

Future analysis could include breakdown of the type of services included in this category e.g. range of services, cost, frequency, type of participant, type of CC.

Private Health Insurance Clients (MBF and HCF)

Service usage data of clients of the two private health insurance companies, MBF and HCF is presented separately in Charts A5.13a to A5.14b of the Final Report.

Department of Veterans' Affairs Clients

Analysis to differentiate between DVA inpatient and non-DVA inpatient services is presented in Charts A5.15a to A5.20b of the Final Report. The DVA data could not be interpreted in the same way as the other inpatient hospital data. DVA data were collected as per patient hospital day (bed day) records, compared to admission event data regardless of the number of days for other participants. The cost data also differed. The cost only included the accommodation or bed day costs, not the medical costs such as theatre, which were all included for non-DVA clients.

Further analysis could test the relative change between DVA clients and other Linked Care participants and between DVA clients in the Intervention and Control groups.

Impact of Care Coordinator Type

Analysis was conducted by CC type to explore if CCs had different influences on the type and cost of services participants used during the trial, particularly any patterns of change. The analysis used the allocation of the last CC.⁸⁰ CC types were divided into GP, non-GP part-time and full-time CCs, using data about the 614 participants who had an allocated CC during the May 1998 to September 1999 period. The analysis separated inpatient services from all other service groups because of the infrequency and high cost of inpatient services. DVA inpatient services were treated separately because of the difference in the nature of the data (see above).

Analysis showed mean use and mean cost of services varied according to CC type (Final Report, Charts A5.21a to A5.23b). Cost and use was higher for participants with a non-GP part-time CCs. This could either be due to the characteristics of the participants or the CCs. There was no evidence to suggest a difference in the characteristics of participants allocated to the various CC types, but this should be confirmed through statistical analysis. Further analysis is needed to explore this apparent difference between CC types.

⁸⁰ Further analysis could include longitudinal analysis by CC, taking point-of-time-allocated-CC, to account for the effects of CC reassignment on service use and cost.

Part C Conclusions

7.1 Introduction

At the completion of the Live Phase of the trial, Linked Care had been fully operational for approximately 21 months. Progress over the time from the initial expression of interest, through the establishment of the trial, recruitment of participants and the live operation of the trial to the conclusion was impressive. Linked Care was able to demonstrate a practical operational model, based on the principles of coordinated care, which operated within budget. This model served substantial numbers of people with complex care needs from the trial's catchment area in the Hornsby Ku-ring-gai municipalities over a prolonged period of time.

The three key elements of the coordinated care model – a fund pool, case management arrangements through CCs, and the use of individual care plans for all participants - were each well established. Within the constraints of the trial design, operational issues that arose during implementation were also effectively addressed by Linked Care management and other health professionals and service providers who participated as partners in Linked Care.

As the results presented earlier in the report have shown, many aspects of the operation of Linked Care were successful. However, there were also a number of elements of the model of care coordination utilised by Linked Care that were not demonstrated to be any more effective than the pre-existing service provision arrangements, despite the increased costs associated with their introduction.

7.2 Summary

Access to care services by Linked Care participants was enhanced by the care coordination and fund pool mechanisms. There were no confirmed cases in which access by other clients was detrimentally affected by the operation of Linked Care. The contrast between the easy access for Linked Care participants to some community services, most notably the Home Care Service of New South Wales, while other applicants were placed on a waiting list, was widely criticised and regarded by many as inequitable. Structural barriers within agencies might have disadvantaged non-participant clients. First, they might have been unable to accurately claim full reimbursement from the fund pool for services accessed by participants. Second, ability to employ additional and replacement staff appeared to be constrained. Evidence on this was inconclusive (Section 4.5).

Linked Care provided an opportunity for providers to meet face to face in management and CC meetings. The hospital liaison process to notify Linked Care of participants admitted to hospital improved communication. Whether CCs acted on the notification was not evaluated, nor did the hospitals expand the process to notifying other service providers. Anecdotal and evaluator observations indicated that there was some improved collaboration between service providers. Service manager, staff and CC questionnaires indicated no effect or detrimental effects.

The Linked Care geographic area was subject to other collaborative initiatives, particularly between HACC services, that also had potential to improve the integration of care e.g. CIARR, formalised waiting lists.

Caregivers indicated improved satisfaction with Linked Care by the end of the trial, rather than being fearful of forfeiting their significant role in the life of their family member.

Participants reported high satisfaction with the quality of care in both the Intervention and Control groups. These satisfaction scores tended to converge during the course of the trial. Participants did not report duplication of tasks as a problem.

CCs reported being able to arrange care quicker through mechanisms such as avoiding waiting lists and using private care until public care could be arranged. They complained about the repetitive paperwork generated by the care coordination process. Evidence-based guidelines were thought by CCs and service providers to be inappropriate for care coordination of chronic complex care participants with multiple needs.

Participants appeared to access similar medical care irrespective of their CC type. Participants in the Intervention group were able to access higher levels of community-based care than participants in the Control group.

7.3 Implications

In this section we concentrate on the implications of the findings about the service provider experience of Linked Care. The conclusions are drawn to be of relevance to readers seeking to improve local patterns of service provision and promote appropriate forms of care substitution.

? Additional coordination processes, but little or no impact on structure or practice

The establishment of the Coordinated Care Trials placed considerable emphasis on mechanisms for the coordination of existing services and health professionals. At the local level, attention was also given to the development of substitution strategies. Importantly, however, Linked Care was limited to working within constraints of the existing system of services. No structural changes in service operations were achieved or, in retrospect, envisaged. The outcome was that additional transaction levels were introduced into the local service system. These carried additional direct and indirect administrative and organisational costs while having at best, only an indirect impact on care provided to participants at the actual point of service delivery.

Following the lead provided by successful overseas trials of case management (Davies, 1992, 1994; Fine and Thomson, 1995) future trials may wish to change this emphasis. This could, for example, involve improved targeting of case management or limiting its duration (see below). Other strategies could concentrate on developing more comprehensive development processes for service delivery, involving, for example, the establishment of multi-disciplinary home care teams or the introduction of skilled, multi-task care workers (as compared with the existing specialised approach). Greater use could also be made of comprehensive staff education strategies.

? *Ongoing care coordination and care planning appear expensive and only necessary for some participants*

While there has been considerable enthusiasm for the processes of case management (and its variants such as care coordination) and care planning amongst service providers and policy makers, the evidence from Linked Care suggests that these interventions were not cost-effective for at least a proportion of the participants. Future trials could constrain or target these interventions, limiting their application to short-term case management for those whose needs are associated with a particular crisis (such as admission or discharge from hospital following unexpected illness) and targeting ongoing case management more closely to those most likely to benefit over time. One possible target group might be clients with extensive disabilities and chronic illnesses, unable to access services without mediation and needing ongoing adjustments and additional support not provided by existing agencies.

? *Care Coordination is not a viable method of cost-control at present*

The evaluation evidence suggests that the CCs in Linked Care were not able to exercise devolved budgetary control for many if not most of the participants for whom they were responsible. Instead, they generally served as budget monitors, responsible for tracking expenses that were generated by the participant's self-referral activities, or by referrals initiated by others. This difficulty arises from the continuation of existing service access and payment arrangements in both the public and private sectors, alongside the introduction of Linked Care. To test the efficacy of devolved budgetary management, different spending authorisation arrangements, requiring approval by a CC before a service is accessed, may need to be introduced. This would arguably involve a diminution of existing consumer rights under Medicare for public patients and may prove difficult to test through a trial mechanism. For clients with private health insurance coverage, however, such an approach could provide a valuable mechanism for cost-control and hence, prove an attractive proposition for the purposes of more extensive trials.

? *Fund pooling methodology is still developing*

Controversies surrounding the interpretation of the findings of this evaluation are likely to identify the fund pooling methodologies as still immature. Linked Care management achieved well beyond reasonable expectations in the development of the methods of calculating annual capitation fees for existing participants, but considerable doubt still remained at the conclusion of the trial, over the actual calculation processes. One of the difficulties identified was associated with predicting changes in costs in the final year of a person's life, as previous service use patterns do not provide much guidance in such cases. Difficulties were also experienced in calculating capitation rates for individual services, both hospitals and community services. Further, it is unclear whether a capitation method has yet been developed which would be acceptable to GPs or to Divisions of General Practice. Future trials of fund pooling may need to consider relying on centrally derived funding formulas.

? *The original COAG ‘diagnosis’ of problems with the health and social care system was inaccurate and exaggerated*

The focus of this evaluation has largely been on the performance of Linked Care and on the outcomes of the coordinated care model for participants. However, the robust performance of the pre-existing system of services in the Control area, should command equal attention. The absence of significant differences in the outcomes of participants in the Control group in the Ryde Hunters Hill area demonstrates that the original ‘diagnosis’ of the problems with the health and social care system advanced by the COAG (COAG, 1995) was inaccurate and exaggerated. By portraying the system as expensive, crisis ridden, fragmented, inaccessible for consumers and unresponsive to their needs, many of the strengths of the existing system were overlooked. Further examination of the strengths of the existing system, using, for example, more detailed analysis of Control group area data, is warranted.

? *Collaborative local approach to serving the population was valued*

One of the more positive findings of the evaluation was the extent to which the collaborative and systemic approach to servicing the local population was valued by participants and stakeholders. Until the introduction of Linked Care there had been few opportunities for representatives from the different services and GPs to plan joint activities. The system of working parties and voluntary agreements entered into by the stakeholders was intended purely as an instrumental mechanism for Linked Care, but they appear to have produced considerable incidental benefits. Building on this experience, it may prove possible to adopt many of Linked Care’s consultative, community-building methods in future locality-based initiatives for service development.

Finally, we consider the potential implications of extending the principles of the coordinated care model to operating principles for the Australian health care system.

? *Operational viability*

Linked Care has demonstrated that it is possible to use the approach of coordinated care as the basic operational principle of a system of care. While the evidence from the evaluation presented earlier in this report shows the approach did not ensure a superior level of outcome for participants, neither is there any evidence of systematic disadvantage. Recipients of the care, family caregivers and health professionals from a range of disciplines rated the care provided positively. The evidence suggests that the approach was in general, comparable to and in some cases possibly preferred to the standard forms of care available to the participants.

? *Potential cost implications*

The coordinated care approach adopted by Linked Care appeared to be most questionable in terms of the cost of the operations. Considerable savings had been anticipated from the introduction of substitution strategies as part of Linked Care. There was no evidence of successful, cost reducing substitution of services beyond that which was already evident in the standard care available to the Control group. Evident instead was the additional costs involved in operating the model.

The evidence presented in the *Local Evaluation Final Report* suggests that the trial operated within budget, and that over the period September 1997 to December 1999, a

total surplus of \$714 283 was achieved (Section 3.3)e. However this figure included infrastructure grants and other monies. If the ongoing costs of infrastructure, other operational concerns and relevant service usage costs are analysed, the surplus is reduced to \$294 599 still, apparently, a healthy financial result. How can it be that such a surplus was produced for the Intervention group while the level of expenditure, per participant, exceeds that of the Control group on almost all items? The answer lies in the qualifications associated with this surplus calculation. The capitation rates used to calculate the contribution by stakeholder services, for example, appear to have been inaccurate. It is unlikely that such rates could be sustained on a population basis without considerable additional expenditure by government. Other financial data management difficulties appear to have contributed to the apparent surplus. These include the incomplete collection of service usage data (and, therefore not paid from the pool); decisions about the attribution of costs as either establishment, ongoing or trial-related costs, and the absence of continuous recruitment despite a high exit rate for a small number of clients.

Diligent administration by Linked Care management kept the additional costs of care coordination and project administration to a minimum. This was achieved by maintaining payments for care coordination at a low level and by increasing the productivity of many CCs through relatively large work loads. There were suggestions that this level of productivity and efficiency may not have been sustainable had Linked Care continued. CCs for example, complained that their case loads were high whilst their level of remuneration was too low for ongoing operation. But even if these relatively low levels of ongoing costs had been maintained, the results would still require expenditure additional to existing service usage costs for participants.

Taken together, the results suggest that the model did not offer a simple solution to the financial problems of providing public care through the existing system of services. Doubts about the viability of the fund pool suggest that the approach would not be affordable as the main principle for the Australian Health Care System. Even in a modified form, as a sub-system to be deployed for those needing complex care, it would require the injection of significant extra amounts of funding into the care system. Incomplete accounting records and other problems discussed above, however, point to the need for further work on this issue. This is also discussed further below.

? *Fund pooling methodology*

Linked Care demonstrated that it is possible to create a fund pool utilising contributions from participating services. However, as discussed above and noted earlier in the report, the extent to which such fund pools could serve as viable sources of funding for all care needs of clients in the future is less clear. Although incomplete records and other problems make definitive statements about the adequacy of the fund pool difficult, it would be imprudent to proceed with the approach without further financial research.

If fund pooling were to be favoured for further trials, the main question arising from the experience of Linked Care is: should fund pool calculations be carried out at the local level? The data from the evaluation to date suggest not. Not only was it a very resource intensive exercise, it was one requiring extensive professional expertise, well beyond the level of financial expertise available in most health and community care services. Further, the proliferation of local level approaches to the calculation of fund pool contributions would,

over time, tend to regional differences which would undermine inter-regional equity and may place the ongoing financial viability of some services at risk.

? *Excluded services*

One of the more interesting findings of the evaluation concerned the higher rate of admission of participants from the Intervention group to nursing home care when compared to the admission rate from the Control group. Under these circumstances, a suspicion arises, perhaps unfairly, that the funding arrangements may have created an incentive for placing high-need, high-cost participants off budget in such homes.

Given that a great many of the participating services, particularly those funded through the HACC program, had been developed as alternatives to such care, it was a major flaw in the national design of the trials that residential care services such as nursing homes were excluded from the stakeholders and contributors to the funds pool. It is recommended that residential care be included in any further trials.

7.4 Conclusion

The results of Linked Care provide valuable insights into the operation of the health and community services system available to most residents of New South Wales. In the Intervention area, innovative service provision arrangements were put in place within a short period and were found to function with reasonable effectiveness to the general satisfaction of their direct users.

Doubts remain, however, about a number of aspects of the program. These include doubts as to the full cost and affordability of the innovative approach and doubts as to the true value of some of the planning mechanisms, especially care plans and the extensive use of care coordination for all participants. The failure to markedly improve outcomes for participants, in comparison with those of members of the Control group, also raises important questions about the identification of problems in the existing system of care.

Encouragingly, the results suggest that the system operating in the Control area functioned reasonably effectively, and that major health gains or improvements in the outcomes for consumers were not easily achieved simply by improving care coordination arrangements. This is not to suggest, however, that improvements are not possible. Indeed much could be learnt from Linked Care that would be of benefit to the existing system. By reviewing the substitution strategies proposed in the trial, for example, it may be possible to identify cost-effective opportunities for improvement that can readily be adopted by existing services.

To those who promoted the trial, the results should be encouraging. They provide a strong testimony to the value of establishing large scale demonstration projects in the field of health care and have ensured that a wealth of information and experience will be available to inform future developments. The results presented in this report provide the first opportunity to examine these issues comprehensively. Further analysis of the data collected should sharpen the lessons learned from Linked Care and yield further valuable insights into the operation of health and care services in the Hornsby Ku-ring-gai area, and across New South Wales and Australia.

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Appendices

Appendix 1: National and Local Hypotheses

National Hypotheses

1. That *coordination* of care for people with *multiple service needs*, where care is accessed through *individual care plans* and *funds are pooled* from existing programs, will result in improved individual client *health and well-being* within *existing resources*.

That the success of coordinated care, as testing in the primary hypothesis, will be affected by:

2. the *extent of substitution* between services within the trial pool;
3. the *range of services* included in the trial and the *size of the pool*;
4. the *characteristics of the participants* to whom services are provided;
5. the *quality* of the clinical and service delivery protocols;
6. the *characteristics of the care coordination* function;
7. the particular *types of administrative arrangements*;
8. the extent to which health and community service *clients are partners* in the planning of the coordinated care trial the development of care plans and empowerment through the coordination process; and
9. that the primary results can be achieved *without detriment to other key areas* of government policy particularly in regard to equity of access and privacy including any impact on clients outside the trial.

Other areas to be examined are:

10. the extent of *collaboration in care* between those involved (including participants and informal caregivers), as expressed in such matters as communication, sharing common guidelines, care pathways and protocols; and
11. the *quality of care* provided, in terms of such measures as timeliness and consistency of the care provided, the financial and geographic accessibility of care, the cultural appropriateness of care, the reduction of duplication of tasks, and the evidence of efficacy as demonstrated through adherence to evidence based guidelines and other relevant measures.

Local Hypotheses

12. To improve the *health outcomes* and *social well-being* of people with *multiple service needs* while maximising their *ability to exercise choice* and *live independently* in the community by *coordinating care* from community and health services, within *existing resources and pooled funds*.

A further six primary objectives are concerned largely with getting the trial and its evaluation established and with implementing the mechanisms for pooled funding and service planning. These objectives, elaborated by the local evaluation working party, are:

13. to develop and implement a pilot of coordinated care which ... will *identify the characteristics of coordinated care* which contribute to the improvement in participants health and social well-being ...;
14. to establish a system of care planning for participants receiving care from *a range of providers* including funded services and *informal caregivers*;
15. to assess whether coordinated care can be provided ... in a way which demonstrates *cost-effectiveness*;
16. to operate the trial in a manner which has *no detrimental effect on access to care or privacy*;
17. to evaluate this pilot in terms of *participant satisfaction*, outcomes relating to *health status* and *social well-being*, *provider satisfaction*, the *management model* (structure and process), *cost-effectiveness* and *carer satisfaction*; and
18. to create a 'pool' of funds from which services will be funded with *greater flexibility* and with a *closer match to clients' needs*.

Five other secondary objectives are concerned with changing existing patterns of service usage to realise the project's aims.

19. to provide a *service mix* that better meets the *needs of frail aged* people, people with *severe disabilities* ... and people with *complex chronic medical* problems in the Hornsby Ku-ring-gai areas.
20. to *substitute high cost, high dependency* support services with lower cost lower dependency services where appropriate to maintain clients in the most *appropriate environment*.
21. to *substitute inappropriate service usage* by more appropriate service usage by the introduction of *new funding* arrangements.
22. to test different approaches to care management...; and
23. to introduce integrated, multidisciplinary assessment services for this group.

Four major aspects of the intervention were also specified in the funding agreement and consultancy brief. These are:

24. the introduction of *new assessment* arrangements;
25. care management arrangements that include a *care coordinator* and a *care planning team* for the set of related needs;

26. the establishment of a *pool of funds* for the trial groups from which access to included services is funded *in accordance with the care plan*; and
27. *funding participating agencies* according to an *agreed schedule of fees*.

Appendix 2. Evaluation Conceptual Framework

As the number and range of hypotheses suggest, the evaluation of such a large-scale trial is a major undertaking in its own right. To help manage the complexity of the research task, a sound conceptual framework is essential. Building on the basic framework set out by the national evaluation and the NSAHS specifications for the local evaluation, the research design and methodologies were conceived as largely following the broader field of research in social policy. In this approach data of different kinds, often collected using a number of different methods, is drawn together in order to inform decision making about policy issues. The approach is demanding but also eclectic and pragmatic, using different approaches when and as necessary, to collect, assemble and analyse different types of evidence in the most rigorous manner possible.

Research Questions

To assess the relative success of the reforms introduced in the Hornsby Ku ring gai district in meeting the broad aims and objectives of the trial, the evaluation needed to be able to determine whether the Intervention led to improved outcomes for clients by increasing the effectiveness and efficiency of service provision, and not by relying on increased expenditure. As a first step towards the development of a methodological framework, the evaluation was conceptualised as an attempt to answer two related sets of questions.

- i. What specific innovations were planned in the trial? How were these actually implemented, what factors assisted or impeded the process, and what were the financial and organisational costs involved?*

Experience in Australia and overseas shows that plans for the introduction of major reforms are usually significantly modified and developed in the process of being implemented. The first set of research questions therefore focuses attention on issues of implementation and cost, drawing attention to issues concerned with the organisation of services and the processes of change and development that occur in attempting to develop a more integrated and effective system of provisions within the given economic and systemic constraints. It is essentially concerned with the organisational processes by which the trial developed, and operated over time.

- ii. Have the innovations led to improvements in service provision which influence the outcomes for participants and their caregivers?*

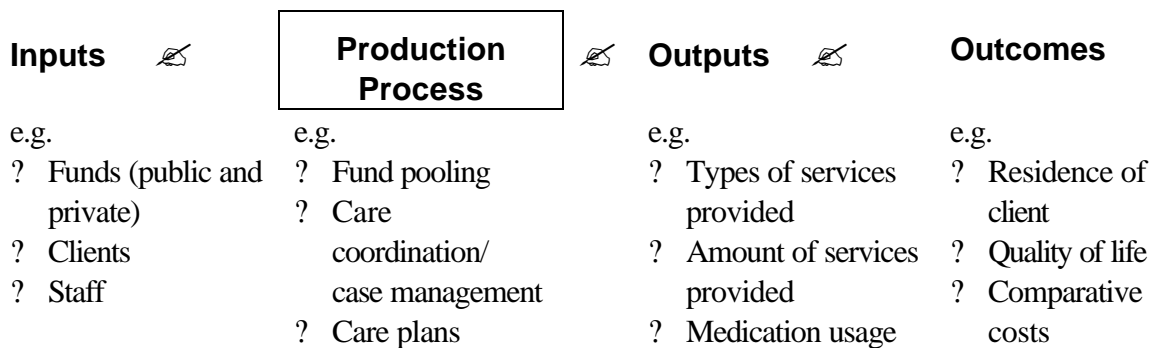
This second set of questions concerned the outputs of services and the outcomes of service provision for actual and potential clients in the target group. Its focus is on the measurement of results for the participants.

To address the questions, three research paradigms were particularly important for this study. The first, the Production of Welfare approach (Davies et al. 1986, 1990)⁸¹, is essentially a conceptual scheme linking different components of the policy process. Derived originally from the economic analysis of production processes, the approach links together service inputs, outputs and outcomes. Drawing these together is the production process itself. For this study, the scheme provides a relatively simple and practical way of conceptualising the Intervention, and of ordering the vast amounts of evaluative data material that the trial will generate.

⁸¹Davies, B. and D. Challis (1986), *Matching Resources to Needs in Community Care*, Gower, Aldershot; Davies, B., A. Bebbington and H. Charnley, with B. Baines, E. Ferlie, M. Hughes and J. Twigg (1990), *Resources, Needs and Outcomes in Community-Based Care. A comparative study of the production of welfare for elderly people in ten local authorities in England and Wales*, Avebury, Aldershot.

Applying this schema to the Linked Care trial, the relationship between the different components of the project can be conceptualised as follows (Fig. 2.1):

Figure 2.1 The Production of Welfare Process and the Linked Care Trial



The second approach utilised in the development of the research design was based on the ethnographic tradition of social research, applied to the study of contemporary complex societies. Sometimes termed ‘Administrative Anthropology’, the approach uses methods such as participant observation, in-depth interviews and the analysis of documentary evidence, to obtain and analyse data on the evolution of administrative and organisational processes involved in the trial.

The third element of the research design developed for the evaluation is based on epidemiology, utilising a comparative approach in which the results for participants in the intervention group are compared with those for a matched control group of research subjects.

It is widely recognised that there are a clear advantages to be derived from using a randomised control group in medical trials. Randomisation of the trial subjects (participants) chosen from the same pool of subjects to the intervention and control groups allows for differences between individual subjects that might affect the outcomes of the study to be controlled for, providing a sufficiently large sample size is selected. Differences between the intervention and control groups can then be attributed only to the intervention and not to pre-existing differences between the two groups. However, there are often practical reasons and/or ethical for selecting a control group on another basis. Practical difficulties arose when seeking to use a matched control group from outside the trial area in the case of the Linked Care trial. Having considered the issue, the Evaluation Team endorsed the approach proposed by the trial management to select a matched control group from a comparable, neighbouring area, the Ryde/Hunters Hill municipalities.

Appendix 3. Evaluation Data Sets

Data set	No. times administered	Data type	
		quantitative	qualitative
Participants			
1. Participant Profile (demographics)	2	x	
2. SF-36 Health and Well Being Questionnaire	3	x	
3. Participant Telephone Interview	3		x
4. Participant Questionnaire (service usage, support and well being)	2	x	x
5. Service usage and care plan	continuous	x	
6. Medical care plan (diagnosis and measure of control)	2	x	
7. Participant exit data	1	x	
8. Allocation and reassignment to CCs	many	x	
Service Providers			
1. Service Providers Interview	1		x
2. Service Staff and Volunteer Questionnaire	2	x	
3. Service Provision Data Survey	2	x	
4. Service Manager Questionnaire	2	x	x
5. General Practitioner Questionnaire	2	x	
6. General Practice Focus Group	1		x
Care Coordinators			
1. Care coordinator Interview	1		x
2. Care coordinator Questionnaire	2	x	x
3. Care coordinator demographics and exits	1	x	
Organisation of Linked Care			
1. Consumer Representatives Focus Group	1		x
2. Consumer Representatives Survey	1		

3. Linked Care staff Focus Group	2	x
4. Trial minutes, reports and policies		x

Appendix 4: General Practitioners - comparative health insurance data on consultation and test ordering

Comparative HIC data was collected about all GPs in the Intervention and Control areas to test differences and changes between groups of GPs during the trial. Comparisons were also made to all GPs in NSW.

In the June 1997 quarter, GPs who had patients in Linked Care, had a higher number of patient contacts than those who had no patients in Linked Care. This was apparent for both the GPs in the Intervention and Control areas (Table A4.12).

The average number of patient contacts decreased for GPs in the Intervention area (whether or not they had patients in the Control) except for GPs who were CCs (the number of GPs who were CCs was small reducing from 82 in 1998 to 34 in 1999). There was no significant change for GPs in the Control area or all GPs in NSW over the period.

Table A4.1: Average Consultations per GP in the Quarter, Hornsby Ku-ring-gai, Ryde Hunters Hill, 1997 to 1999

	June 1997	June 1998	June 1999
Intervention area			
Care coordinator GP	1,236	1,206	1,244
Non-CC with patients in trial	1,386	1,354	1,233
No patients in trial	1,107	1,085	1,003
Control area			
Patients in trial	1,409	1,293	1,359
No patients in trial	1,121	1,263	1,324
Total NSW	1,374	1,334	1,333

GPs with patients in Linked Care in the Intervention area tended to have more patient contacts than those with no patients in Linked Care (Table A4.13). Intervention area GPs with patients in Linked Care who were not CCs and those with no patients in Linked Care tended to have fewer contacts in 1999 than in 1997 whereas this did not change for CCs.

Table A4.2: GPs with less than 1,000 Patient Contacts per Quarter, Hornsby Ku-ring-gai, Ryde Hunters Hill, 1997 to 1999

	June 1997	June 1998	June 1999
Intervention area			
Care coordinator GP	35	38	32
Non-CC with patients in trial	33	36	40
No patients in trial	51	53	57
Control area			
Patients in trial	27	34	34
No patients in trial	54	44	49

At baseline, GPs who had patients in Linked Care (in both Intervention and Control areas) had lower rates of ordering imaging than those who did not have patients in Linked Care or who were CCs (Table A4.14). Over the three years the rate of ordering increased for GPs in the Intervention area (except for CCs), for those with patients in Linked Care in the Control area and for all GPs in NSW. The only group whose rate of ordering decreased were GPs with no patients in Linked Care in the Control areas.

Table A4.3: Imaging Ordered in Quarter: Rate per 100 Patient Contacts, Hornsby Ku-ring-gai, Ryde Hunters Hill, 1997 to 1999

	June 1997	June 1998	June 1999
Intervention area			
Care coordinator GP	7.0	6.9	6.8
Non-CC with patients in trial	6.0	6.4	7.1
No patients in trial	7.0	7.1	7.6
Control area			
Patients in trial	6.1	6.3	7.0
No patients in trial	7.2	7.4	6.2
Total NSW	7.1	7.6	7.8

In the June 1999 quarter, GPs in the Control area with no patients in Linked Care had lower rates of ordering CT scans and xrays of the shoulders and pelvis than other groups. GPs in the Intervention area with patients in Linked Care had higher rates of ordering CT scans than those in the Control area. Those in the Intervention area with no patients in Linked Care had higher rates of ordering ultrasound and xrays of the extremities.

There appears to have been an increase in imaging ordering for GPs in the Intervention area and those with patients in Linked Care in the Control area (Table A4.14). In the Intervention areas this appears to have been largely due to increased rates of ordering ultrasound, examinations, CT scans and xrays of the extremities (unpublished data).

Table A4.4: Pathology Ordered in Quarter: Rate per 100 Patient Contacts

	June 1997	June 1998	June 1999
Intervention area			
Care coordinator GP	45.7	46.0	46.1
Non-CC with patients in trial	40.9	41.2	45.2
No patients in trial	39.3	40.2	43.3
Control area			
Patients in trial	39.9	43.1	42.7
No patients in trial	36.1	35.1	34.6
Total NSW	37.7	38.5	39.1

In June 1997 GPs who were CCs had higher and GPs in the Control areas with no patients in trial had lower rates of pathology test ordering respectively than the other groups (Table A4.15).

Rates for GPs in the Intervention area (except CCs who were already higher) for GPs in the Control areas with patients in Linked Care, and NSW GPs as a whole, increased over the 3 years. The greatest increase was for GPs with patients in Linked Care who were not CCs. Only for GPs in the Control area with no patients in Linked Care did rates decrease.

In the June 1999 quarter, rates of ordering chemistry tests were higher for GPs in the Intervention area with patients in Linked Care and lower for GPs in the Control areas with no patients in Linked Care. Rates of microbiological and cytological tests were higher for GPs in the Intervention area with no patients in Linked Care.

Pathology test ordering rates increased for all groups except for GPs in the Control area with no patients in Linked Care with the greatest increase being for GPs in the Intervention area with patients in Linked Care. This appears largely due to increased rates of chemistry ordering and to a lesser extent rates of microbiological and cytological tests. The reasons for this are unclear but may be partially explained by increasing screening for diseases and complication (e.g. for diabetes).

The HIC data about the various groups of GPs in the Control and Intervention areas reveal some differences in both consultations and test ordering patterns, both between the groups and over time.

Appendix 5: Service Staff and Volunteer Questionnaire Results – May 1998 and November 1999

Table A5.1: Service Personnel Views of Service Integration, 1998 and 1999

	1998		1999	
	n	%	n	%
Service				
Sydney Home Nursing Service	13	27.1	15	19.5
Home Care Service	11	22.9	4	5.2
Hornsby Hosp. Rehab. & aged Care	12	25.0	11	14.3
Mercy Family Centre	7	14.6	17	22.1
Neighbour Aid	5	10.4	0	0.0
Wesley Gardens	0	0.0	1	1.3
Meals on Wheels	0	0.0	0	0.0
GPs	-	-	29	37.7
Position				
Field Staff/Volunteers	12	25.0	5	6.5
Coordinator	14	29.2	14	18.2
Nurse	15	31.3	15	19.5
Occupational Therapist	1	2.1	3	3.9
Social Worker	4	8.3	2	2.6
Manager	1	2.1	0	0.0
Clinical Specialist	1	2.1	3	3.9
Physiotherapist	0	0.0	6	7.8
Medical Practitioner/Doctor	-	-	29	37.7
Years working at service				
Less than 3 years	15	31.5	24	35.8
3 to <7 years	16	33.6	15	22.4
7 to 12 years	12	25.2	15	22.4
Over 12 years	5	10.5	13	19.4
Employment status				
Paid	43	89.6	73	96.1
Other	5	10.4	3	3.9
Care coordinator?				
Yes	24	54.5	46	63.9
No	20	45.5	26	36.1
Knowledge of assistance provided by other services				
Excellent	23	51.1	21	28.0 **
Satisfactory	17	37.8	43	57.3
Needs to be improved	5	11.1	11	14.7
Sharing of information within my area				
Excellent	9	20.5	16	21.3
Satisfactory	22	50.0	42	56.0
Needs to be improved	13	29.5	17	22.7
Communication between services				
Excellent	5	11.6	7	9.3
Satisfactory	23	53.5	44	58.7
Needs to be improved	15	34.9	24	32.0
Referral process to community services				
Excellent	17	40.5	18	24.0 *
Satisfactory	20	47.6	51	68.0

Needs to be improved	5	11.9	6	8.0
Referral process to GPs				
Excellent	6	16.7	16	26.7
Satisfactory	23	63.9	40	66.7
Needs to be improved	7	19.4	4	6.7

Table A5.1 (continued): Service Personnel Views of Service Integration, 1998 and 1999

	1998		1999		
	n	%	n	%	
Referral process to other health and hospital services					
Excellent	19	46.3	20	26.7	*
Satisfactory	18	43.9	49	65.3	
Needs to be improved	4	9.8	6	8.0	
Referral process FROM community services					
Excellent	10	23.8	8	11.0	
Satisfactory	25	59.5	49	67.1	
Needs to be improved	7	16.7	16	21.9	
Referral process FROM GPs					
Excellent	5	12.8	3	5.0	
Satisfactory	15	38.5	33	55.0	
Needs to be improved	19	48.7	24	40.0	
Referral process FROM other health and hospital services					
Excellent	4	10.3	5	6.8	
Satisfactory	24	61.5	44	60.3	
Needs to be improved	11	28.2	24	32.9	
Clients' initial access to services					
Excellent	8	17.8	11	14.9	
Satisfactory	22	48.9	39	52.7	
Needs to be improved	15	33.3	24	32.4	
Clients' involvement in choosing level of care provided					
Excellent	14	32.6	18	24.3	
Satisfactory	22	51.2	46	62.2	
Needs to be improved	7	16.3	10	13.5	
Informed if clients receive assistance from other services					
Always or nearly always	5	11.4	9	12.0	
Often	8	18.2	25	33.3	
Sometimes	18	40.9	26	34.7	
Seldom or never	13	29.5	15	20.0	
Officially informed of outcome of referral					
Always or nearly always	5	11.9	8	10.7	
Often	3	7.1	17	22.7	
Sometimes	19	45.2	23	30.7	
Seldom or never	15	35.7	27	36.0	
Description of care provided to clients					
Staff work closely together most of time	21	46.7	29	39.7	**
Staff work closely together occasionally	13	28.9	38	52.1	
Staff know little about each other's work	11	24.4	6	8.2	
Description of relationship with other services					
Well coordinated team	14	31.8	22	29.3	
Partially coordinated team	25	56.8	46	61.3	

Series of separate uncoordinated services	5	11.4	7	9.3
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Source: Service personnel questionnaires, May 1998 and November 1999.

*** p<0.01 **p<0.05 *p<0.10

Table A5.2: Service Personnel Views of Service Integration: Care Coordinators (GP and non-GP) compared to Other Staff, 1998 and 1999

	Care Coordinators			Other Staff	
	Non-GP 1998	Non-GP 1999	GP 1999	1998	1999
	f (n=24)	f (n=17)	f (n=29)	f (n=20)	f (n=26)
Service					
Sydney Home Nursing Service	12	3	-	1	11
Home Care Service	3	0	-	7	4
Hornsby Hosp. Rehab. & aged Care	5	6	-	6	5
Mercy Family Centre	4	7	-	2	6
Neighbour Aid	0	0	-	4	0
Wesley Gardens	0	1	-	0	0
Meals on Wheels	0	0	-	0	0
GPs	-	-	29	-	0
Position					
Field Staff/Volunteers	0	0	-	9	1
Coordinator	7	8	-	7	6
Nurse	13	4	-	2	10
Occupational Therapist	0	3	-	0	0
Social Worker	2	2	-	2	0
Manager	1	0	-	0	0
Clinical Specialist	1	0	-	0	3
Physiotherapist	0	0	-	0	6
Medical Practitioner/Doctor	-	-	29	-	0
Knowledge of assistance provided by other services					
	%	%	%	%	%
Excellent	62.5	52.9	17.9 *	33.3	26.9
Satisfactory	37.5	47.1	64.3	44.4	50.0
Needs to be improved	0.0	0.0	17.9	22.2	23.1
Sharing of information within my area					
Excellent	25.0	35.3	7.1 *	17.6	30.8
Satisfactory	58.3	52.9	78.6	29.4	26.9
Needs to be improved	16.7	11.8	14.3	52.9	42.3
Communication between services					
Excellent	12.5	11.8	3.6	12.5	15.4
Satisfactory	62.5	70.6	71.4	37.5	30.8
Needs to be improved	25.0	17.6	25.0	50.0	53.8
Referral process to community services					
Excellent	50.0	41.2	3.6***	33.3	38.5
Satisfactory	45.8	52.9	85.7	40.0	53.8
Needs to be improved	4.2	5.9	10.7	26.7	7.7
Referral process to GPs					
Excellent	19.0	21.4	23.5	16.7	36.0 **
Satisfactory	71.4	78.6	64.7	50.0	60.0
Needs to be improved	9.5	0.0	11.8	33.3	4.0
Referral process to other health and hospital services					
Excellent	56.5	29.4 *	21.4	25.0	34.6
Satisfactory	43.5	70.6	71.4	50.0	57.7
Needs to be improved	0.0	0.0	7.1	25.0	7.7
Referral process FROM community services					

Excellent	29.2	23.5	7.7 *	13.3	7.7
Satisfactory	58.3	70.6	57.7	60.0	69.2
Needs to be improved	12.5	5.9	34.6	26.7	23.1

Table A5.2 (Continued): Service Personnel Views of Service Integration: Care Coordinators (GP and non-GP) compared to Other Staff, 1998 and 1999

	Care Coordinators			Other Staff	
	Non-GP 1998	Non-GP 1999	GP 1999	1998	1999
	% (n=24)	% (n=17)	% (n=29)	% (n=20)	% (n=26)
Referral process FROM GPs					
Excellent	21.7	5.9	14.3	0.0	0.0
Satisfactory	34.8	41.2	64.3	42.9	56.0
Needs to be improved	43.5	52.9	21.4	57.1	44.0
Referral process FROM other health and hospital services					
Excellent	13.0	5.9	11.1	7.7	3.8
Satisfactory	60.9	76.5	59.3	53.8	46.2
Needs to be improved	26.1	17.6	29.6	38.5	50.0
Clients' initial access to services					
Excellent	25.0	17.6	10.7 *	5.6	19.2
Satisfactory	45.8	35.3	67.9	50.0	42.3
Needs to be improved	29.2	47.1	21.4	44.4	38.5
Clients' involvement in choosing level of care provided					
Excellent	45.8	29.4	11.1	12.5	26.9
Satisfactory	41.7	64.7	74.1	62.5	53.8
Needs to be improved	12.5	5.9	14.8	25.0	19.2
Informed if clients receive assistance from other services					
Always or nearly always	17.4	11.8	10.7	5.9	3.8
Often	17.4	47.1	32.1	23.5	30.8
Sometimes	47.8	41.2	28.6	29.4	42.3
Seldom or never	17.4	0.0	28.6	41.2	23.1
Officially informed of outcome of referral					
Always or nearly always	13.0	11.8	10.7	13.3	3.8
Often	8.7	23.5	39.3	6.7	7.7
Sometimes	56.5	35.3	25.0	26.7	38.5
Seldom or never	21.7	29.4	25.0	53.3	50.0
Description of care provided to clients					
Staff work closely together most of time	69.6	64.7	30.8 *	16.7	34.6 *
Staff work closely together occasionally	17.4	29.4	61.5	44.4	53.8
Staff know little about each other's work	13.0	5.9	7.7	38.9	11.5
Description of relationship with other services					
Well coordinated team	41.7	35.3	25.0	18.8	23.1
Partially coordinated team	58.3	58.8	64.3	62.5	69.2
Series of separate uncoordinated services	0.0	5.9	10.7	18.8	7.7

Source: Service personnel questionnaires, May 1998 and November 1999.

*** p<0.01 **p<0.05 * p<0.10

Appendix 6: Care Coordinators Views of Linked Care

Table A6.1: Care Coordinators Views of Linked Care, 1998 and 1999

	1998		1999		
	n	%	n	%	
Service					
Sydney Home Nursing Service	5	12.2	15	19.5	
Home Care Service	2	4.9	4	5.2	
Hornsby Hosp. Rehab. & aged Care	6	14.6	11	14.3	
Mercy Family Centre	8	19.5	17	22.1	
Neighbour Aid	0	0.0	0	0.0	
Wesley Gardens	2	4.9	1	1.3	
Meals on Wheels	0	0.0	0	0.0	
GPs	18	43.9	29	37.7	
Position					
Field Staff/Volunteers	0	0.0	5	6.5	
Coordinator	13	31.7	14	18.2	
Nurse	6	14.6	15	19.5	
Occupational Therapist	3	7.3	3	3.9	
Social Worker	1	2.4	2	2.6	
Clinical Specialist	0	0.0	3	3.9	
Physiotherapist	0	0.0	6	7.8	
Medical Practitioner/Doctor	18	43.9	29	37.7	
No. of care coordinated clients					
0 to 24 clients	40	93.0	46	100.0	
25 to 49 clients	0	0.0	0	0.0	
50 to 74 clients	1	2.3	0	0.0	
Over 75 clients	2	4.7	0	0.0	
Other participants who are not your clients					
0 to 19	29	80.6	39	86.7	
20 to 39	7	19.4	3	6.7	
40 or more	0	0.0	3	6.7	
Trial created problems in coordinating and planning care					
Yes	7	15.9	9	19.6	
No	38	86.4	37	80.4	
Trial created problems in delivering care					
Yes	9	20.9	2	4.3	**
No	34	79.1	44	95.7	
Trial affected health and well-being of clients					
Positive change	15	34.1	15	32.6	*
Negative change	0	0.0	1	2.2	
No change	24	54.5	30	65.2	
Don't know	5	11.4	0	0.0	
Trial been more beneficial for some types of clients than others					
Yes	19	43.2	25	56.8	
No	9	20.5	8	18.2	
Don't know	15	34.1	11	25.0	

Conflict between CC role and other work				
Yes	20	45.5	19	42.2
No	24	54.5	24	53.3
Don't know	0	0.0	2	4.4

Table A6.1 (continued): Care Coordinators Views of Linked Care, 1998, 1999

	1998		1999		
	n	%	n	%	
Used strategies to involve clients in care plans					
Yes	28	65.1	26	56.5	***
No	12	27.9	19	41.3	
Don't know	3	7.0	1	2.2	
Care coordination has enhanced client control in choosing care					
Yes	18	41.9	17	37.8	
No	18	41.9	22	48.9	
Don't know	7	16.3	6	13.3	
Trial changed access to assistance or care					
Yes	12	28.6	11	23.9	
No	26	61.9	34	73.9	
Don't know	4	9.5	1	2.2	
Trial changed access or assistance provided by other services					
Yes	22	52.4	22	50.0	
No	11	26.2	18	40.9	
Don't know	9	21.4	4	9.1	
Trial had impact on links with other services					
Positive change	28	63.6	23	50.0	
Negative change	1	2.3	1	2.2	
No change	15	34.1	21	45.7	
Don't know	0	0.0	1	2.2	
Problems persuading services to cooperate					
Yes	12	28.6	8	17.8	
No	27	64.3	34	75.6	
Don't know	3	7.1	3	6.7	
Trial has more benefits than disadvantages for my clients					
Strongly agree	8	18.2	5	11.1	
Agree	14	31.8	18	40.0	
Neutral	16	36.4	13	28.9	
Disagree	6	13.6	4	8.9	
Strongly disagree	0	0.0	5	11.1	
Trial has more benefits than disadvantages for other clients					
Strongly agree	1	2.4	1	2.2	
Agree	5	11.9	5	11.1	
Neutral	23	54.8	16	35.6	
Disagree	8	19.0	12	26.7	
Strongly disagree	5	11.9	11	24.4	
Trial has more benefits than disadvantages for my service/practice					
Strongly agree	4	9.3	3	6.7	
Agree	11	25.6	8	17.8	
Neutral	16	37.2	17	37.8	
Disagree	9	20.9	7	15.6	
Strongly disagree	3	7.0	10	22.2	

**Adequate administrative support for your
role as CC**

Yes	34	77.3	24	58.5
No	5	11.4	12	29.3
Don't know	5	11.4	5	12.2

*** p<0.01 **p<0.05 *p<0.10

Source: Care coordinators questionnaires, November 1998 and 1999