
Multidisciplinary Care in Australia:

a National
Demonstration Project
in Breast Cancer

Summary report

National Breast Cancer Centre

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This summary report on the *National Multidisciplinary Care Demonstration Project, National Profile Study of Multidisciplinary Care and Observational Study of Multidisciplinary Care* was prepared and produced by the National Breast Cancer Centre:

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Collaborations and sites

National Multidisciplinary Care Demonstration Project

Collaborations

Barwon and Western Breast Consortium, VIC

North Queensland Breast Cancer Collaboration, QLD

Prince of Wales Hospital, Royal Hospital for Women, Prince of Wales Private Hospital and associated rural sites, NSW

Royal Melbourne Hospital, The Western Hospital and Ballarat Health Services, VIC

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National Profile Study of Multidisciplinary Care

The hospitals that participated in the *National Profile Study of Multidisciplinary Care* are listed in Appendix III.

Observational Study of Multidisciplinary Care

The sites that participated in the *Observational Study of Multidisciplinary Care* are listed below (in alphabetical order).

- Austin and Repatriation Breast Clinic, Austin and Repatriation Medical Centre, VIC
- Centre for Breast Health, Royal Women's Hospital Brisbane, QLD
- Monash Breast Service, Southern Health – Monash Medical Centre, VIC
- Rachel Forster Breast Clinic, Royal Prince Alfred Hospital, NSW
- Strathfield Breast Centre, Strathfield Private Hospital, NSW

Project Team, Steering Committee and Site Selection Subcommittee

Details of the Project Team, Steering Committee and Site Selection Subcommittee membership are given in Appendix I. The input of Professor Tom Anderson, visiting pathology fellow from Scotland and international member of the Site Selection Subcommittee is acknowledged.

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The cost analysis for the *National Multidisciplinary Care Demonstration Project* was conducted by Ms Natalia Price and Mr Michael Lees of M-TAG Pty Ltd. Advice about the costing was provided by Mr Glenn Salkeld, University of Sydney.

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Over the course of the *National Multidisciplinary Care Demonstration Project*, *National Profile Study of Multidisciplinary Care* and *Observational Study of Multidisciplinary Care*, the following people were involved as staff members in the conduct of the Project(s) and/or the preparation of this report:

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Introduction

The Australian *Priorities for Action in Cancer Control 2001–2003*¹ identified 13 priority actions for cancer control. Two of those priorities are:

- *reorganising breast cancer management to ensure seamless continuity of care from screening, first presentation with symptoms, to diagnosis, treatment and follow-up care*
- *improving the psychosocial care of women with breast cancer through provision of breast care nurses.*

A third action, also related to multidisciplinary care (MDC) is:

- *improving outcomes for lung and ovarian cancer by ensuring all people with these cancers are assessed at a multidisciplinary specialist centre as soon as possible after diagnosis.*

Optimising Cancer Care in Australia,² a report produced by key cancer control groups in 2003, highlights the need to reform cancer services into a ‘*more patient-centred model*’ (p.11) and calls for strategic reform and reorganisation of service delivery in cancer care. Two of the recommendations from this report are:

- *that investigation of incentives required to foster, maintain and evaluate integrated multidisciplinary cancer care in both the public and private sectors be undertaken, with a view to widening availability of multidisciplinary cancer care in all settings*
- *that a national process of quality-driven organizational reform be implemented to improve ongoing supportive care throughout the cancer journey.*

The difficulties inherent in achieving these aims are acknowledged and include Australia’s special geographic circumstances as well as funding arrangements (MBS items), which provide financial disincentives for practitioners to engage in multidisciplinary case conferences. Results reported in this Demonstration Project highlight these issues.

MDC was recommended by the House of Representatives Inquiry as a means of achieving best practice in the management of breast cancer in that ‘*through their combined understanding..., all members of the team liaise and co-operate together and with the patient to diagnose, treat and manage the condition...to the highest possible standard of care*’ (p. viii).³ Without a multidisciplinary team, women with breast cancer may not be offered the full range of potential treatments and psychosocial issues may not be considered. The *NHMRC Clinical Practice Guidelines for the Management of Early*

*Breast Cancer*⁴ also recommend that: *women with breast cancer should be treated by specialists who have a demonstrated expertise in breast cancer and have access to the full range of multidisciplinary treatment options.*

For the purposes of this Demonstration Project, MDC is defined as an integrated team approach to health care in which medical and allied health care professionals consider all relevant treatment options and develop collaboratively an individual treatment plan for each patient. Evidence indicates that a multidisciplinary approach to the care of women with breast cancer can reduce mortality and improve quality of life for women with the disease.^{5–8} Multidisciplinary care is incorporated in the UK Manual of Cancer Services Standards (2000) for audit of breast cancer services⁹ and also features in the Canadian¹⁰ and US strategies for cancer control.¹¹

Australia is embarking on the development of a series of National Service Improvement Frameworks (NSIF) as a key direction for the National Health Priority Action Council for 2003–2005, commencing with cancer. The approach taken in the NSIF for cancer reflects the patient journey and pathways of care and aims to identify ideal care, current care, potential gain, critical intervention points and structural change. This Demonstration Project provides information around the critical intervention point of treatment planning following diagnosis. The *Principles of Multidisciplinary Care* developed for the Project identify the key components for breast cancer treatment planning, the *National Profile Study of Multidisciplinary Care* carried out as part of the Project describes current care, and the results of the Demonstration Project itself identify areas of potential gain and approaches to structural change.

In summary, the Demonstration Project has shown that most specialist clinicians treating women with breast cancer are aware of evidence-based guidelines and that compliance is high. Nevertheless, improvements in the provision of psychosocial support and information about treatment options involving the full range of therapies have been demonstrated following implementation of MDC strategies. While most clinicians recognised the desirability of MDC, a large minority of services did not offer multidisciplinary treatment planning.

There are particular barriers related to communication with rural and regional specialists and general practitioners, and the inadequacy of infrastructure resources, both human and technological, to overcome these barriers. Medical funding arrangements need to recognise the benefits of a multidisciplinary approach to patient care, given that MDC case conferences impose a cost, whether financial or opportunity cost, on all participants and institutions.

Inadequate logistic and telecommunications support for meetings, coupled with the need to overcome reluctance to assume added workload without added remuneration, combine to

make the achievement of MDC a major enterprise dependent upon the efforts and personal skills of a few committed individuals. The success of MDC is ultimately dependent upon ‘champions’ and individuals with leadership qualities.

If MDC for all cancers is an important objective for Australian health services, structural change will be needed to ensure that making it work is the responsibility of the total system rather than a few committed individuals.

National Multidisciplinary Care Demonstration Project

The National Breast Cancer Centre was commissioned by the Australian Government Department of Health and Ageing to establish a *National Multidisciplinary Care Demonstration Project* for breast cancer in Australia. This Project was supported by two other components: a *National Profile Study of Multidisciplinary Care* and an *Observational Study of Multidisciplinary Care*.

The three-year *National Multidisciplinary Care Demonstration Project* was designed to provide:

1. information about the process, impact, acceptability and cost of the provision of MDC for women with breast cancer in Australia
2. information about MDC that would be applicable to other cancers and other chronic diseases
3. recommendations about the implementation of MDC for breast cancer in Australia taking into account possible funding structures.

While a number of health services in Australia offer some form of MDC, published sources reveal little, if any, analysis of its components, barriers or enablers, nor any established or recommended models for the Australian situation. The *National Multidisciplinary Care Demonstration Project* therefore required a definition of MDC relevant for the Australian context. Given the mix of private and public service provision in Australia, and significant regional variations in delivery of and access to services, a flexible principle-based approach to MDC was required. The definition was based on a set of *Principles of Multidisciplinary Care*, with explicit recognition that these would be implemented differently in different locations.

A secondary objective of the Demonstration Project was to evaluate whether this flexible, principle-based approach to MDC was useful in practice. Such an approach to MDC is unique and has the potential for extrapolation to other health care systems, cancers and diseases, particularly chronic conditions such as diabetes that require input from a range of health care professionals.

Defining the *Principles of Multidisciplinary Care* for Australia

To establish the principles underpinning a flexible approach to MDC, common factors in overseas models of care were reviewed^{12,13} and key elements of care were identified from research and reports and informed by the experience and knowledge of Australian experts. The draft Principles were reviewed by clinicians, allied health professionals and consumer representatives. The *Principles of Multidisciplinary Care*¹⁴ emphasise:

- a **team approach**, involving core disciplines integral to the provision of good care, with input from other specialties as required (where ‘core’ disciplines are surgery, radiology, medical and radiation oncology, pathology and supportive care)
- **communication** among team members regarding treatment planning
- access to the **full therapeutic range** for all women, regardless of geographical remoteness or size of institution
- provision of care in accord with **nationally agreed standards**
- **involvement of the woman** in decisions about her care.

Table 1 provides a comprehensive summary of the Principles and examples of outcomes by which implementation could be evaluated.

Table I Principles of Multidisciplinary Care¹⁴

Principle of care	Outcome
Team	
<ul style="list-style-type: none"> • The disciplines represented by the ‘core’ team should minimally include surgery, oncology (radiation and medical oncology), pathology, radiology and supportive care. The individual woman’s general practitioner will be part of her team. • In order to ensure that the woman has access to the full range of therapeutic options, the ‘core team’ may be expanded or contracted to include services (which may be off site), such as genetics, psychiatry, physiotherapy and nuclear medicine. 	<p>The ‘breast cancer care team’ is established and known.</p> <p>Referral networks established for non-core team specialist services.</p>
Communication	Outcome
<ul style="list-style-type: none"> • A communications framework should be established which supports and ensures interactive participation from all relevant team members at regular and dedicated case conference meetings. • Multidisciplinary input should be considered for all women with breast cancer; however, not all cases may ultimately necessitate team discussion. 	<p>Communication mechanisms are established to facilitate case discussion by all team members.</p> <p>A local protocol is established for deciding which cases may not require team discussion.</p>

Table I Principles of Multidisciplinary Care¹⁴ (cont'd)

Full therapeutic range	Outcome
<ul style="list-style-type: none"> • Geographical remoteness and/or small size of the institution delivering care should not be impediments to the delivery of multidisciplinary care for women with breast cancer. • The members of the team should support the multidisciplinary approach to care by establishing collaborative working links. 	<p>Systems are established for ensuring that all women have access to all relevant services.</p> <p>Systems are established to support collaborative working links between team members.</p>
Standards of care	Outcome
<ul style="list-style-type: none"> • All clinicians involved in the management of women with breast cancer should practice in accord with guideline recommendations. • The treatment plan for a woman should consider individual patient circumstances and wishes. • Discussion and decisions about treatment options should only be considered when all relevant patient results and information are available. • In areas where the number of new cancers is small, formal collaborative links with larger units/centres should give support and foster expertise in the smaller unit. • Maintenance of standards of best practice is supported by a number of activities which promote professional development. 	<p>Local clinician data are consistent with national benchmarks.</p> <p>The final treatment plan should be acceptable to the woman.</p> <p>Final reports are available to all core team members before treatment planning.</p> <p>Systems are established for the exchange of knowledge and expertise between larger and smaller caseload centres.</p> <p>Systems are established for the support of professional education activities.</p>

Table I Principles of Multidisciplinary Care¹⁴ (cont'd)

Involvement of the woman	Outcome
<ul style="list-style-type: none">• Women with breast cancer should be encouraged to participate as a member of the multidisciplinary team in treatment planning.	Women are supported to have as much input into their treatment plan as they wish.
<ul style="list-style-type: none">• The woman diagnosed with breast cancer should be fully informed of her treatment options as well as the benefits, risks and possible complications of treatments offered. Appropriate literature should be offered to assist her in decision making. This information should be made available to the woman in a form that is appropriate to her educational level, language and culture.	All women should be fully informed about all aspects of their treatment choices.
<ul style="list-style-type: none">• Supportive care is an integral part of multidisciplinary care. Clinicians who treat women with breast cancer should inform them of how to access appropriate support services.	All clinicians involved in the management of women with breast cancer should ensure that women have information about and access to support services.
<ul style="list-style-type: none">• The woman with breast cancer should be aware of the ongoing collaboration and communication between members of the multidisciplinary team about her treatment.	Women with breast cancer feel that their care is coordinated and not fragmented.

National Profile Study of Multidisciplinary Care

A baseline *National Profile Study of Multidisciplinary Care*, conducted in 2000 prior to the implementation phase of the Demonstration Project, explored the organisation of services for women with breast cancer across Australia in relation to the *Principles of Multidisciplinary Care* and surveyed clinicians' views about MDC. The survey included 60 hospitals across Australia that treated high, medium and low caseloads of women with breast cancer (see Appendix III).

The Profile Study confirmed that, despite senior clinical support for MDC, opportunities remained for improvement in its implementation, particularly in rural areas. The majority of clinicians surveyed considered the key components of the *Principles of Multidisciplinary Care* to be either essential or preferable for the provision of MDC.

Irrespective of caseload, most hospitals in the sample had implemented at least some aspects of MDC. Not surprisingly, the provision of MDC services was generally lower in hospitals with low caseloads, although some low-caseload hospitals provided MDC in accord with at least some of the Principles.

Even in the high-caseload hospitals, opportunities for improvement were identified. Thirty percent of hospitals with high breast cancer caseloads did not have regular multidisciplinary meetings and only 50% of high caseload hospitals had regular MDC meetings that considered all cases. The clinicians reported that none of the multidisciplinary treatment planning meetings involved general practitioners.

Only 45% of high-caseload hospitals had written protocols based on best practice guidelines covering multiple aspects of care. While all high-caseload hospitals had some form of data collection about the management of women with breast cancer, only 40% had a process for the review of the data. Given that these high-caseload hospitals each treat at least 100 women with breast cancer per year, their procedures have a significant impact on the care of women with breast cancer in Australia.

The Profile Study highlighted a disparity between attitudes towards and the implementation of MDC within Australia. For example, all respondents agreed that it is either essential or preferable that women with breast cancer have access to all relevant treatment and support services. However, 15% of hospitals did not have established referral links for reconstructive surgery or psychiatric care, 12% did not provide 'core' supportive care services and 27% had

no protocols for the management of women with breast cancer. Similarly, while 95% of respondents agreed that it is essential for clinicians involved in the management of women with breast cancer to communicate with one another about their care, 30% of high-caseload hospitals did not have regular multidisciplinary treatment planning meetings and even fewer meetings were held in the medium- and low-caseload hospitals.

The *National Profile Study of Multidisciplinary Care* confirmed that, at the outset of the Demonstration Project, there was scope for enhancing the practice of MDC across the spectrum of hospitals across Australia and hospitals were receptive to the concept of MDC.

National Multidisciplinary Care Demonstration Project

Methodology

The three-year *National Multidisciplinary Care Demonstration Project* investigated the impact, cost and acceptability of implementing MDC for women with breast cancer at three multi-facility sites across Australia (referred to as ‘collaborations’). The Project was overseen by a Steering Committee (see Appendix I). Collaborations were invited to submit an expression of interest and the final selection was made following a rigorous peer-reviewed selection process. A fourth collaboration joined the Project following receipt of additional funding. However, despite a range of efforts one of the main multidisciplinary strategies was not implemented by the fourth collaboration and after 11 months the Chief Clinical Collaborators indicated that it was not feasible to complete the Project.

Each of the collaborations nominated locally relevant MDC strategies designed in accord with the *Principles of Multidisciplinary Care*. Collaborations were evaluated using a pre–post design over a 21-month period to identify outcomes, barriers, enablers and costs of the strategies implemented, using the Principles as criteria (see Table 2). Evaluations were carried out at baseline, during the start-up phase of the study during implementation and after implementation of the nominated strategies. The timeline for the Project phases is summarised in Appendix II.

Five evaluation tools were used:

- clinician survey (pre- and post-implementation)
- consumer survey (pre- and post-implementation)
- clinical audit (pre- and post-implementation)
- clinician acceptability survey (post-implementation only)
- activity logs (ongoing throughout Project).

Table 2 Evaluation tools used to assess impact on patterns of care in reference to the *Principles of Multidisciplinary Care*

Principle of care	Evaluation tool			
	Consumer survey	Clinical audit	Activity log	Clinician survey
<i>Team</i>				
1. The disciplines represented by the 'core' team should minimally include surgery, oncology (radiation and medical oncology), pathology, radiology and supportive care. The individual woman's general practitioner will be part of her team.	✓	✓	✓	✓
2. In order to ensure that the woman has access to the full range of therapeutic options, the 'core team' may be expanded or contracted to include services (which may be off site), such as genetics, psychiatry, physiotherapy and nuclear medicine.	✓	✓		✓
<i>Communication</i>				
3. A communications framework should be established which supports and ensures interactive participation from all relevant team members at regular and dedicated case conference meetings.	✓		✓	✓
4. Multidisciplinary input should be considered for all women with breast cancer; however, not all cases may ultimately necessitate team discussion.			✓	✓
<i>Full therapeutic range</i>				
5. Geographical remoteness and/or small size of the institution delivering care should not be impediments to the delivery of multidisciplinary care for women with breast cancer.	✓		✓	✓
6. The members of the team should support the multidisciplinary approach to care by establishing collaborative working links.	✓		✓	✓

Table 2 Evaluation tools used to assess impact on patterns of care in reference to the *Principles of Multidisciplinary Care* (cont'd)

Principle of care	Evaluation tool			
	Consumer survey	Clinical audit	Activity log	Clinician survey
<i>Standards of care</i>				
7. All clinicians involved in the management of women with breast cancer should practice in accord with guideline recommendations.	✓	✓	✓	✓
8. The treatment plan for a woman should consider individual patient circumstances and wishes.	✓			✓
9. Discussion and decisions about treatment options should only be considered when all relevant patient results and information are available.			✓	✓
10. In areas where the number of new cancers is small, formal collaborative links with larger units/centres should give support and foster expertise in the smaller unit.			✓	✓
11. Maintenance of standards of best practice is supported by a number of activities which promote professional development.			✓	✓
<i>Involvement of the woman</i>				
12. Women with breast cancer should be encouraged to participate as a member of the multidisciplinary team in treatment planning.	✓		✓	✓

In addition, an analysis of the costs associated with case conference meetings and other strategies to implement MDC was performed. The costing analysis described is based on a report by M-TAG Pty Ltd, an independent health economics consultancy group.

The collaborations

Collaboration 1

The four sites included in Collaboration 1 were:

- Site a: Urban area, population ~198,000
- Site b: Large rural town, population ~ 30,000
- Site c: Rural town, population ~9,000
- Site d: Rural town, population ~10,000

Organisations involved in the collaboration included one public and two private hospitals in the urban area, three rural district hospitals, an urban radiology clinic, a pathology company, the state cancer council and state breast screening program.

Collaboration 2

Collaboration 2 comprised five sites distributed over a large geographical area of one state:

- Site a: Urban area, population ~94,000
- Site b: Urban area, population ~119,000
- Site c: Urban area, population ~77,000
- Site d: Rural town, population ~10,500
- Site e: Rural town, population ~20,500

The facilities, organisations and individuals involved in Collaboration 2 were public and private surgeons in all five sites, a regional oncology service, public and private radiologists, pathologists, a regional clinical school, a university school of medicine, hospital-based and community nursing services, the state breast screening program, urban and rural divisions of general practice, and a regional rural health training unit.

Collaboration 3

Collaboration 3 involved facilities from various regions within one state, including a major metropolitan city and two large rural centres. The three sites included in the collaboration were:

- Site a: Region of a metropolitan city, population ~180,000
- Site b: Rural centre, population ~37,000
- Site c: Rural centre, population ~17,500

The facilities involved in Collaboration 3 included two public hospitals and one private hospital from one region in the city and two hospitals in the rural centres.

Strategies adopted by the collaborations

The strategies nominated by each of the collaborations to improve MDC in their region are outlined below. A common focus for the strategies was multidisciplinary case conference meetings: regular meetings dedicated to treatment planning were established where previously none occurred, or the focus of existing meetings was changed to fulfill this remit. The need to strengthen communication and collaborative links was identified by all collaborations, and emphasis on the role of the breast care nurse in this process was a common strategy.

Collaboration 1

Collaboration 1 nominated three strategies:

1. Continued development of the breast clinic in Site a (urban area) to provide a forum and focus to take MDC beyond the point of diagnosis.
2. Development of a multidisciplinary clinic at Site b (rural town) together with enhanced communications, with a view to extending such activity to the remainder of the region in the longer term. Investigation and development of case conferencing throughout the region, using existing information technology and the potential networking of individual practitioners' personal computers.
3. Co-ordination of breast care nursing and removal of institutional barriers to enhance uniformity and continuity.

Collaboration 2

Collaboration 2 nominated over forty strategies. Some were quite specific (eg, developing team letterhead), while others were quite general (eg, strengthening current links within the region). For ease of reporting, the strategies have been summarised into four key areas, as follows:

1. Development of an identifiable multidisciplinary team and strengthening of links between the team members by:
 - developing a team letterhead and other identifiers
 - producing a clinical management pathway to provide an overview of the interdisciplinary interaction between team members
 - holding group meetings and team sessions to address issues such as perceived concerns about loss of clinical independence
 - enhancing the provision of ‘non-core’ services through the standardisation of referral forms and recording outcomes of referrals on the patient management register.
2. Establishment of regular case conference team meetings, with distant sites linked via videoconference facilities.
3. Establishment of collaborative links and strengthening of existing links across the region including:
 - an assessment of current gaps in service provision
 - developing a directory of off-site services
 - establishing shared-care processes to reduce patient travel and family disruption.
4. Improvement of psychosocial support for women with breast cancer by establishing local protocols to ensure all newly diagnosed women consult with a supportive care team member before treatment decisions are made.

Collaboration 3

Collaboration 3 nominated a number of strategies to improve MDC that can be summarised into three key areas:

1. Expansion of MDC through the appointment of a breast care nurse to:
 - act as a member of the multidisciplinary team and attend case conference meetings
 - serve as the link to coordinate the seamless passage of women with early breast cancer through the phases of diagnosis, surgery and adjuvant therapy
 - identify and facilitate referral for women requiring counselling for hereditary or psychosocial issues
 - collaborate with senior nursing personnel across all relevant disciplines to ensure patients receive relevant referrals and information about clinical trials
 - be present for collaborative treatment planning with the woman and provide supportive care if required
 - provide feedback to patients about the outcomes of multidisciplinary meetings
 - establish and strengthen links with Sites b and c by attending satellite clinics, participating in relevant case conferences, formalising links with relevant nursing staff.
2. Strengthening communication within the multidisciplinary team by ensuring that all new ‘cases’ are discussed, including patients from rural centres.
3. Establishment of video- or teleconferencing links with rural centres (Sites b and c) to enable participation in multidisciplinary meetings.

Outcomes

Clinician and consumer surveys

The results of the survey of clinicians from the three participating collaborations indicate that many improvements in service delivery were made in line with the *Principles of Multidisciplinary Care* over the course of the Project. Key findings reported by clinicians included increases in:

- regular, weekly multidisciplinary meetings dedicated to the planning of treatment for women with breast cancer
- the number of ‘core’ and ‘non-core’ team members attending multidisciplinary meetings
- specialist breast care nurses being recognised as a team member involved in managing women with breast cancer
- provision of routine supportive care to women at diagnosis and after treatment
- referral of women with severe anxiety and/or depression to a psychiatrist, with fewer clinicians managing such women on their own.

While the overall findings relate to all three collaborations participating in the Project, it is worth noting some areas where particular strategies were differentially successful. Both Collaborations 1 and 2 aimed to improve the involvement of general practitioners in MDC planning meetings. At post-implementation, only clinicians from Collaboration 1 indicated that general practitioners always attended meetings. This finding confirms process reports from these two collaborations – Collaboration 1 reported that general practitioner strategies had been effective, while Collaboration 2 noted a lack of general practitioner attendance despite efforts of collaboration members. Collaboration 1 made significant efforts from the outset of the Project to encourage attendance of general practitioners at MDC planning meetings, including holding focus groups with general practitioners and involving the local Divisions of General Practice in identifying suitable meeting attendees. Collaboration 2 corresponded with general practitioners to encourage participation with little impact on attendance. These findings suggest that specific targeted strategies are required to gain support for such strategies.

A key strategy for Collaboration 3 was the appointment of a specialist breast care nurse as a team member, to be involved in MDC planning meetings, coordinate the passage of women from diagnosis through treatment and help identify and facilitate women for appropriate counselling referral. The appointment of the breast care nurse and recognition of this individual as a team member was reflected in the responses from the clinicians at this collaboration. Of the collaborations, Collaboration 3 demonstrated the greatest pre- to post-implementation increases in the following:

- perception that the specialist breast care nurse was involved in the management of women
- reporting of the specialist breast care nurse as the nominated team member to provide supportive care for women
- provision of supportive care to women at the time of diagnosis.

In line with this strategy, an increase in attendance at case conference meetings by supportive care professionals was seen over time. This increase was due not only to attendance by the breast care nurse – a clinical psychologist was also in attendance at some meetings, suggesting that a greater emphasis was placed on psychosocial issues in general following the implementation of MDC strategies at this collaboration.

Information gathered from several sources in the Project led to the conclusion that one of the key benefits of a multidisciplinary approach in the short term is improved provision of psychosocial support for women with breast cancer.

Further improvements in accord with the *Principles of Multidisciplinary Care* were increased support for women being treated for breast cancer and assistance for women with decision making. Over the course of the study, reported routine provision of supportive care to women at the time of diagnosis increased significantly. At the end of the study, clinicians relied significantly less on their own judgement to manage women experiencing severe anxiety and/or depression and there was a significant increase in the reported referral of such women to a psychiatrist.

Other increases found during the study, although statistically non-significant, included:

- the number of clinicians who reported that they routinely offered the option of a second consultation to women diagnosed with breast cancer
- recognition that there was an agreed service protocol for accessing interpreters

-
- reported awareness by clinicians of an agreed strategy for providing women with information about, and access to supportive care services
 - awareness of relevant clinical practice guidelines amongst respondent clinicians
 - attendance by respondent clinicians at ‘in-house’ multidisciplinary professional development activities.

A number of findings from the survey of clinicians are validated by the survey of women. Both before and after the implementation of MDC strategies, women tended to report that the people involved in providing their treatment were working as a well-coordinated team, communicating well with each other and keeping the general practitioner informed. The survey of women also indicated a statistically non-significant increase in the provision of information about the psychosocial impact of breast cancer and practical information about adjusting and coping with the disease.

Results from the consumer survey indicate that a high proportion of women were receiving care in accordance with clinical practice guidelines and believed that a team approach was taken to their care before the implementation of MDC strategies. Improvements were seen between the pre- and post-implementation phases of the Project, although few changes were statistically significant. It may be that the impact of MDC strategies needs to be assessed over a longer timeframe in order for the structural and procedural changes implemented to have an observable impact on women with breast cancer.

Overall, the majority of women surveyed at the three collaborations perceived that their care was being coordinated by a team. For the 7% of women who did not perceive that care was coordinated, qualitative data obtained via the consumer survey provides a useful insight into those factors that influence women’s views of their treatment team. In particular, the responses highlighted the importance of clinicians knowing what other people involved in the care of a woman with breast cancer have told the woman about her disease or its treatment. Conflicting information from different specialists or a lack of awareness of other specialists’ decisions were also raised as issues. These findings suggest that improving communication among multidisciplinary team members may be one of the most important factors in ensuring women feel that they are receiving care from a coordinated team.

Activity logs

Activity logs maintained by the collaborations throughout the Project confirm a number of the findings from the survey of clinicians, including an increase in the number of multidisciplinary meetings dedicated to treatment planning for women with breast cancer and in the number of ‘core’ team members attending multidisciplinary meetings following the implementation of MDC strategies.

It is particularly interesting to compare the changes that occurred with time based on the different situations at each of the collaborations at baseline. Where treatment planning meetings were already occurring at baseline and strategies were implemented to alter team composition, the number of meetings held over the course of the Project remained relatively stable. However, at the two collaborations where case conference meetings were not held regularly at baseline, an increase in the number of meetings was seen during the Project. By post-implementation, multidisciplinary case conference meetings dedicated to treatment planning were occurring regularly at the main urban sites of all three collaborations. While the total number of meetings varied depending on the number of participating sites, the number of meetings held at the main urban site for each of the three collaborations was consistent, at 20–21 meetings over the 6-month period (an average of one meeting per week).

Staff attendance at meetings changed over the course of the Project, and by post-implementation, meetings at the main urban sites were generally well attended by the ‘core’ disciplines – these being representatives from surgery, medical and radiation oncology, pathology, radiology and supportive care. Collaborative links had extended beyond the ‘core’ team, with a number of meetings attended by professionals from other disciplines providing specialist services for women with breast cancer, such as breast physicians, physiotherapists, genetic counsellors, occupational therapists, nurses and palliative care specialists. There was also an increased contribution by different core team members to case discussions.

The average number of cases discussed per meeting at collaborations where previously meetings had been infrequent or had not occurred increased over the course of the Project. Some change in the types of cases presented at case conference meetings was also seen over the course of the Project, with an increase in the number of cases of early breast cancer and a decrease in the number of cases of *in situ* disease. The number of radiology and pathology reports available at case conference meetings to assist treatment planning also increased over the course of the Project.

Clinical audit

The clinical audit tool was developed to gather objective data about aspects of clinical care for women with early breast cancer. However, it was acknowledged from the outset that the design and short duration of the Project were not appropriate to demonstrate clinical outcomes for women with breast cancer and that few, if any, significant changes in treatment were likely to be observed between the pre- and post-implementation phases. Factors influencing this view were the already high standard of practice in Australia at baseline (a national patterns of care treatment survey of 1995 identified a high standard of practice in most aspects of care for women with breast cancer¹⁵), the relatively small numbers of women participating in the audit, particularly in some subsets of treatment, and the relatively short implementation time of the Project. However, surrogate measures can provide some evidence of change in practice that can reasonably be expected to translate into improved outcomes in the longer term.

The clinical audit indicated that practice during the pre-implementation phase of the *National Multidisciplinary Care Demonstration Project* was largely in accord with guideline recommendations. For most outcomes measured therefore, either no changes were evident during the post-implementation phase or they were too small to reach statistical significance. Data collected in the clinical audit in which no significant change was evident included: the proportion of women who underwent mastectomy; the proportion of women who were referred to a radiation oncologist prior to breast conserving surgery; the proportion of women with positive nodes who received chemotherapy; the proportion of women whose hormone receptor status was reported; and the proportion of women with oestrogen receptor-positive tumours who received hormone therapy.

Some outcomes did show improvement, but because of the small numbers involved, statistical significance was not tested in some cases and not achieved in others. This was particularly noteworthy in: the proportion of women who were entered into a clinical trial in all three collaborations; the proportion of women who had breast reconstructive surgery after mastectomy at Collaboration 3; the proportion of women who were referred to a medical oncologist prior to commencement of adjuvant systemic or hormone therapy at Collaboration 2; and the proportion of women who received sentinel node biopsy at Collaboration 2.

Some results indicate significant improvements in practice in line with best practice between pre- and post-implementation. A statistically significant increase in the proportion of women who had a preoperative diagnosis of cancer achieved without open biopsy was

seen at Collaboration 2 and an increase of borderline significance was seen at Collaboration 3. This implies a greater use of the triple test approach to diagnosis, correlating the results of clinical examination, breast imaging and fine needle or core biopsy to reach a preoperative diagnosis. In this way, management options can be discussed with the woman prior to her surgery and a one-stage surgical procedure can be performed in the majority of cases. In addition, there was a significant increase in the proportion of women who received sentinel node biopsy at Collaborations 1 and 3. This result reflects an increase in the number of surgeons performing sentinel node biopsy, and was likely to be due to the introduction of the RACS Sentinel Node Axillary Clearance (SNAC) Trial.

Outcomes reported by collaborations

Collaboration 1

Collaboration 1 reported significant achievements in relation to the implementation of multidisciplinary strategies. In Site a, where previously no multidisciplinary meetings were held, regular case conference meetings for treatment planning were implemented. By the end of the Project, multidisciplinary case conference meetings in Site a were well established and were being held on a weekly basis, with approximately 18 participants representing a range of disciplines including general practitioners. Similarly, a multidisciplinary team had formed in Site c, with the team meeting on a weekly basis for case conferencing. Other achievements reported by the collaboration included: establishment of familial cancer clinics; a survey of nurses regarding the identification of psychosocial concerns for women with breast cancer; and the appointment of a regional breast care nurse (funded through the state health department) to help coordinate the provision of care by breast care nurses from across the region.

While Collaboration 1 implemented a number of multidisciplinary strategies over the course of the Project, some major challenges were encountered during this time. Perhaps the greatest barrier to the implementation of multidisciplinary strategies reported by the collaboration was initial resistance to change from some team members. Other reported challenges included: opposition to the establishment of MDC meetings; technical issues related to establishing videoconferencing links; lack of recognition of the importance of psychosocial issues in multidisciplinary discussion; and lack of understanding of the role of breast care nurses.

The implementation of multidisciplinary strategies as reported by Collaboration 1 appeared to have an impact both for women with breast cancer and the clinicians involved in their care. Treatment planning for women with breast cancer in Sites a and b involved multidisciplinary input with a perceived increase in treatment options due to the involvement of medical and radiation oncologists at the treatment planning meetings. Moreover, breast care nurses were

now considered part of the team. At meetings, discussion of issues by members of the team who were aware of the woman's circumstances and wishes had encouraged the development of individualised treatment plans. The collaboration reported a shift away from talking about 'cases' to discussing the woman. Team meetings were perceived to be encouraging practice in accordance with clinical practice guidelines and discussion of new research findings. The Chief Clinical Collaborators indicated that clinicians appeared to gain peer support from the meetings, in particular finding it reassuring to be able to discuss complex cases with the team. At a broader level, networks across the region had been improved through meetings to discuss the implementation of the MDC strategies during the Project.

Collaboration 2

The principal achievements reported by Collaboration 2 were the establishment of regular case presentation multidisciplinary meetings in the three main sites. By the end of the Project, multidisciplinary breast cancer meetings were incorporated into routine clinical practice in Sites a, b and c, with participants from all core disciplines regularly attending the meetings. Health care professionals from other specialty areas, such as plastic surgery, psychiatry and genetic counselling, were also involved in the meetings. Links with distant Sites d and e were well established, with clinical staff from these sites attending multidisciplinary meetings either in person or via a videoconference link. Other achievements reported within the collaboration included: the development and utilisation of team identifiers, the promotion of interdisciplinary clinical management pathways, attainment of funds to appoint three part-time breast care nurses, and the establishment of suitable rooms for counselling women with breast cancer following their initial diagnosis.

A key challenge to the implementation of MDC strategies reported by Collaboration 2 related to the large geographical area it encompassed. While initially it had been envisaged that a region-wide multidisciplinary team would be established, it was soon recognised that such an approach was not feasible. Instead, teams were established within the three main sites (Sites a, b and c) and functioned independently of each other. Attempts to overcome the barrier of distance through the use of videoconferencing had mixed success. Other challenges indicated by the collaboration included: the lack of suitably qualified staff across the region, with two resident medical oncology positions unfilled for most of the Project; the redevelopment of the three major public hospitals during the Project timeframe, which caused disruption to meeting venues and availability of videoconferencing facilities; and lack of attendance by general practitioners at the MDC meetings.

Collaboration 2 reported that the implementation of multidisciplinary strategies had a positive impact. Reports from the collaboration indicated that women with early and advanced breast

cancer had benefited from a more streamlined and efficient management pathway, improved communication between all disciplines and an increased awareness among team members of the availability of ‘non-core’ services. The regular multidisciplinary meetings established were believed to have facilitated and strengthened lines of communication between all those involved in caring for women with breast cancer in the region, within both the public and private sectors. Some sites reported a ‘revolutionary change’ in the level of communication both between and within disciplines. Other outcomes associated with multidisciplinary meetings, reported by the collaboration, were a raised awareness of the importance of considering patient’s suitability for clinical trials and new insights into the various diagnostic and therapeutic modalities for breast cancer. In addition, team members felt they had enhanced intellectual and practical support. The multidisciplinary meetings were reported to be of educational value to trainee specialists, particularly surgical registrars, who presented cases at the meetings, participated in discussions, interpreted diagnostic images and gained an appreciation of the multidisciplinary model of care.

The implementation of multidisciplinary strategies appeared also to have had an impact at the facility level. The experience of being part of a multidisciplinary team and the perceived benefits of regular multidisciplinary meetings had inspired some members of Collaboration 2 and other groups within the participating sites to adopt a similar approach for other diseases. By the completion of the Project, additional multidisciplinary meetings had been established in various facilities located within the collaboration region for colorectal cancer, melanoma and respiratory medicine.

Collaboration 3

Key achievements reported by Collaboration 3 were primarily associated with the improved coordination and continuity of care provided by the breast care nurse. Previously in the large metropolitan site (Site a), women with breast cancer may have been treated in several facilities with little integration of services. The breast care nurse provided an important focal point for all involved in the management of women with breast cancer and appeared to foster a cohesive approach among the multidisciplinary team members. The collaboration reported that continuity of care and psychosocial support provided to women with breast cancer within the collaboration was enhanced by the breast care nurse’s involvement in the pathway from diagnosis to treatment and then to follow-up. Other reported achievements associated with the breast care nurse joining the multidisciplinary team and attending team meetings included: the development of more individualised treatment plans, due to a greater awareness of psychosocial issues; an increase in the involvement of women in making treatment decisions through their enhanced understanding of breast cancer, its treatment and their options; greater

consideration of eligibility of women for clinical trials; the establishment of breast cancer support groups; and the strengthening of links between the urban Site a and one of the rural centres, particularly with regard to assisting those women required to travel to the urban site for treatment.

The main challenges reported by Collaboration 3 tended to be associated with attempts to establish stronger links with the rural centres. The collaboration was unable to establish a direct link between the breast care nurse and one of the rural centres (Site b), primarily because of a reluctance to change long-established care pathways and a lack of support for the Project by some clinical staff. Linking surgeons from the rural centres to the multidisciplinary team meetings via video- or teleconferencing was not implemented during the Project. Reported challenges encountered in relation to the establishment of the video- and/or teleconferencing links included the withdrawal of funding for technical infrastructure, the small number of breast cancer cases from rural centres, and the irregularity and unpredictability of presentation of rural cases by some clinicians. The latter of these issues similarly impacted on ensuring that all cases of breast cancer diagnosed within the collaboration were discussed at the multidisciplinary treatment planning meetings.

The implementation of at least one of the key multidisciplinary strategies had, according to the collaboration's reports, impacted on the provision of care for women with breast cancer. For the women themselves, there appeared to have been improvements in relation to continuity of care, the provision of information regarding treatment, psychosocial support, involvement in the decision-making process, access to specialty care services if required and, for those women from rural centres, improved transition of care for those requiring treatment in the urban site.

Survey of acceptability to clinicians and impact of multidisciplinary care

The implementation of MDC strategies was generally well accepted by the clinicians at each of the collaborations. A number of differences between the collaborations involved in the Project were apparent, both in terms of the health care contexts in which they were functioning and the types of multidisciplinary strategies nominated. Despite these differences, the majority of clinicians surveyed across all three collaborations believed the implementation of the multidisciplinary strategies was worthwhile and that it had improved the care of women with breast cancer.

The majority of clinicians were aware that their facility was involved in the *National Multidisciplinary Care Demonstration Project* and that it had been part of a larger collaboration. Most

clinicians indicated that the links between their facility and others had been ‘somewhat’ to ‘very’ collaborative in nature and believed that these links were likely to be maintained after completion of the Project. The majority of clinicians could identify at least one multidisciplinary strategy that had been implemented within their collaboration. The strategies that were reported as having been ‘successfully’ implemented reflected those that the collaborations had aimed to implement, with the establishment of multidisciplinary meetings and the appointment of a breast care nurse being most frequently identified.

However, clinicians perceived that the implementation of multidisciplinary strategies had not proceeded as planned in relation to the rural sites. Indeed, a total of seven clinicians from rural sites were not aware of any strategies that had been implemented in their collaboration. Comments by some of the rural clinicians interviewed provide an important insight into the challenges involved in implementing MDC in such locations. In particular, some suggested that there was a perception that major centres may have been trying to ‘impose’ practices and new models of care on the rural sites, rather than working with the sites to improve care.

In general, clinicians believed that the implementation of multidisciplinary strategies had been beneficial both in terms of improving care for women with breast cancer and enhancing communication between those involved in providing such care. Across the three collaborations, the majority of clinicians (88%) believed that the implementation of the multidisciplinary strategies had improved the care of women with breast cancer within their facility. Similarly, 88% believed that the multidisciplinary strategies had improved communication between team members. Reported outcomes associated with the meetings included increased discussion of the issues associated with providing treatment for breast cancer as well as an improved understanding and respect for colleagues’ roles within the multidisciplinary team. The improved communication inherent in the multidisciplinary strategies was perceived as one of the key impacts at the facility level. Other facility-based outcomes reported by the clinicians included improved coordination of services, greater professional awareness, enhanced team functioning and the perception that women with breast cancer felt they were receiving better care.

The implementation of multidisciplinary strategies also had a positive impact for the clinicians themselves. Clinicians reported that the multidisciplinary approach provided greater emotional and intellectual support, especially with regard to making difficult treatment decisions and discussion of issues or concerns. The supportive environment fostered by the multidisciplinary approach had other associated benefits for clinicians who reported reduced stress and feelings of enhanced professional satisfaction. Other positive personal impacts reported by the clinicians included improved knowledge, greater understanding of the complexities of breast

cancer treatment and improved relationships with the women with breast cancer for whom they were providing treatment. The main negative impact for individual clinicians related to the further demands that the implementation of strategies had placed on their time.

All clinicians who were aware of the strategies that had been implemented within their collaboration indicated that the implementation of multidisciplinary strategies had been worthwhile. However, just over one-third of these clinicians also acknowledged that implementation of the strategies was difficult. Difficulties associated with strategy implementation related to three main issues: the practical issues involved in establishing strategies, such as finding a suitable venue and time for the meetings; political issues involved in gaining support from all team members; and staffing issues, such as not having sufficient oncology staff at a particular site.

Clinicians' advice to other groups who might be considering implementing multidisciplinary strategies in the future tended to reflect these issues. Also emphasised was the importance of the characteristics of the team leader or Chair, with many clinicians indicating that this had a major impact upon the willingness of other team members to participate. The Observational Study component of the Project confirmed this conclusion.

The Demonstration Project had significant flow-on effects that provided further evidence of the perceived benefits of a multidisciplinary approach by the clinicians involved. Most significantly, a number of clinicians reported that their facility was now considering, or had commenced the implementation of similar multidisciplinary strategies for the treatment of patients with other types of cancer.

Cost of implementing multidisciplinary care

The aim of the costing analysis was to provide indicative costs for the set-up and implementation of MDC strategies, with a focus on establishing and maintaining MDC case conference meetings. It is important to emphasise that, while the costing analysis provides valuable information regarding the cost of implementing MDC strategies, it is *not* a cost-effectiveness study. No attempt was made to forecast or quantify potential cost benefits to patients, clinicians or services.

The costing analysis was based primarily on data from the log sheets completed by each of the collaborations during each phase of the Project and related mainly to the costs associated with case conference meetings. Meeting costs include both infrastructure and the cost associated with attendance at meetings by all staff (both public and private) involved in managing women with breast cancer. Additional information was obtained from budget statements produced by

the collaborations and from telephone interviews with collaboration staff at the end of the Project.

As expected, the costs varied considerably, based on the number of meetings and attendees, and differences between each of the collaborations at baseline, with the average cost of MDC case conference meetings at post-implementation ranging from \$178–\$548 per case presented. Where meetings already existed, the average cost by the end of the Project was around \$800 per meeting (or \$180 per case presented). Where meetings were newly established, these costs at least doubled. Costs were understandably higher during the start-up phase for each collaboration. Copies of the costing tables are given in Appendix IV.

Factors influencing the average cost per meeting and the average cost per case presented included the length of the meeting and number of attendees, together with the number of meetings held and the number of cases presented. In general, newly established meetings seemed to be longer, and the number of cases discussed lower than for well-established meetings, resulting in a higher average cost. It is likely that as meetings become more routine, more time-efficient processes are implemented, leading to an increase in the number of cases discussed during meetings, and a decrease in the time needed to discuss each case.

Meeting organisation tasks included notifying participants about the meeting and gathering patient information and test results before the meeting. Some preparation tasks would be performed in any care plan and therefore not all of the preparatory work should be considered as an additional resource use. The associated costs differed according to who was responsible for these tasks and the situation at baseline, with more time spent on meeting organisation for newly established meetings. It is likely that the amount of organisational time required will decrease with time as attendees become familiar with the processes involved.

The resource costs associated with MDC case conference meetings included room hire and equipment costs. Costs for room hire were generally not incurred, as the meeting rooms used were typically hospital rooms that would otherwise be left vacant. Some catering costs were incurred, although these were generally not large. The use of existing equipment, such as data projectors, represented a significant cost saving compared with the purchase of new equipment.

Only one collaboration used video-/teleconferencing as a regular communication tool for MDC strategies. The necessary equipment was already in place and therefore the only costs incurred were call costs. The costs involved in setting up the technology to be able to run videoconferencing were not recorded as part of this Project but, although significant, should be viewed as a part of hospital infrastructure required for multiple purposes.

Other costs associated with the implementation of MDC strategies related to staff salaries, personal time of staff members, project management, and other resource costs such as travel and telephone calls. These costs are not necessarily related to the number of case conference meetings held.

Staff employed specifically for the purposes of implementing MDC strategies included breast care nurses, local evaluation coordinators and secretarial support staff. At Collaboration 3, the breast care nurse salary represented the major increase in cost compared with baseline.

A significant amount of personal time was committed to establishing MDC strategies by collaboration staff, and the amount of time spent during the initial stages of the Project was higher where treatment planning meetings were newly established and intensive lobbying of staff was needed to gain acceptance of the nominated strategies. Less personal time was used where the Project strengthened and formalised existing structures and a complete change in processes and attitudes was not required in order for the nominated strategies to be implemented. Although personal time is not an actual expense, it represents a proxy of opportunity cost. In reality, these staff members were not precluded from working but were deprived of leisure time. While valuation of leisure time is difficult, salary rates have been used as an estimation of the professional worth of these individuals' time. It is important to note that estimates of personal time and the time associated with meeting organisation were made retrospectively and may not be a true reflection of the actual hours spent. In all collaborations, the amount of personal time spent by staff decreased over the course of the Project, suggesting that once strategies have been implemented, less personal time is needed. It is reasonable to assume that a significant change in practice or procedures requires time commitment from the staff involved. Awareness of the potential barriers to the implementation of MDC strategies should help to pre-empt some of the difficulties that may be encountered.

Project management was crucial to the implementation of MDC strategies and the associated cost depended on who was responsible for this task. Where local evaluation coordinators were employed to fulfil this role, the individuals had a dual role of assisting with implementing MDC strategies, and liaising with the National Breast Cancer Centre regarding Project outcomes. The total cost associated with these staff cannot therefore be assigned wholly to the implementation of MDC strategies and it is likely that the cost associated with project management related solely to implementation of MDC strategies is lower than represented here.

Travel and accommodation costs over the course of the Project related to the promotion of MDC strategies rather than travel to MDC case conference meetings. Understandably, these costs were highest during the start-up phase of the Project.

Observational Study of Multidisciplinary Care

The aim of the *Observational Study of Multidisciplinary Care* was to explore current ‘best practice’ in the conduct of multidisciplinary breast cancer case conference meetings in Australia, by observing and describing the commonalities and differences of four models of case conferences perceived to be ‘good’ or ‘successful’. Independent observations were made at three consecutive multidisciplinary case conference meetings at four hospitals in Australia that had been identified as having well-established MDC meetings. These hospitals did not include any collaboration sites participating in the *Demonstration Project*. All participating hospitals had high case loads (100 or more cases of breast cancer treated per year) and were located in urban areas of New South Wales, Victoria and Queensland. Three hospitals were public and one was a private hospital.

Information was collected regarding processes, general content, atmosphere and types of issues discussed at the meetings. Brief interviews with members of the multidisciplinary team following each meeting were used to elicit further information about the organisation, style, leadership and benefit of the meetings.

Analysis of the observations of multidisciplinary case conference meetings and interviews with participants about their perceptions of the meetings revealed many factors that were common to all four sites. These factors were perceived by the independent Observer and the meeting participants to contribute to the ‘success’ of meetings. Common factors for all participating hospitals included:

- Meetings were always, or nearly always, held at the same time in the same venue at each site. The type of meeting rooms and available facilities differed between sites.
- Provision of refreshments and food, as meetings were typically held either outside normal working hours, during breakfast or lunchtimes or towards the end of the working day.
- Allowing approximately 45–60 minutes for case discussions; the number of cases discussed per meeting varied considerably between and within sites and any additional time was used for educational purposes.
- Sound preparation of materials and information in advance of the meeting; the types of materials and the way in which they were prepared varied between sites.

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- Strong leadership and facilitation of meetings by the Chair, which was a surgeon at each site. The most important roles of the Chair included: keeping meetings to the agenda, commencing discussions, encouraging involvement of all participants in case discussions and decision-making, and, at the conclusion of each case discussion, summarising the discussion and inviting any further input before moving to the next case. An alternating Chair was used at one site.
 - Representation at meetings and input into discussions from across the core disciplines.
 - Strategies for communication of case discussion outcomes to the woman concerned, and/or to her general practitioner.

Motivational factors for attending meetings included:

- perceived benefits of the meetings for both clinical participants and their patients
- opportunity to interact with other members of the multidisciplinary team in a generally friendly and inclusive atmosphere
- opportunity for educational interaction and professional development
- streamlining of referral pathways.

While the mental health and wellbeing of participating health care professionals was not measured directly in the Observational Study, participants' perceptions of the many benefits to themselves and their patients of the multidisciplinary case conferences indicated a positive approach of clinicians to their professional life, which may possibly extend to improvements in their overall mental health and wellbeing, as supported by international findings. The clinicians surveyed in the Demonstration Project indicated that benefits to themselves of fostering an MDC approach included reduced stress and feelings of enhanced professional satisfaction.

Barriers and limitations to change

The limited nature or lack of change detected in some areas during the Demonstration Project may be attributed to barriers to change, high standards of care at the outset of the Project or methodological limitations of the evaluation conducted.

A number of barriers to change were encountered by the collaborations implementing MDC strategies. Clinicians surveyed identified demands on their personal time and lack of payment for attendance at the multidisciplinary meetings as issues of concern. Other barriers included practical issues (eg, finding a suitable meeting venue and time), gaining support from all team members and clinical staffing issues.

Rural, remote and small sites within the collaborations reported little change in service linkage or referral to other facilities for the provision of core services not locally available. In a number of collaborations, strategies to improve links with rural facilities were reported as being difficult to implement and not always perceived as effective.

An important insight into barriers to MDC is offered by the fourth collaboration, which withdrew part way through the Project, unable to achieve the MDC strategies nominated by the Collaboration.

One of the main issues reported by Collaboration 4 was that a number of clinicians at one site did not see any benefit in adding what they perceived to be ‘another meeting’ to already functioning meetings. Other issues appeared to relate to confidentiality and privilege, with some clinicians expressing concern about the potential legal implications within their State of discussing patients in an open forum such as a multidisciplinary meeting. Despite the best efforts of the Chief Clinical Collaborators at each site, the link between the urban and regional sites could not be established. It was apparent that, despite verbal and written assurance of support for the Project throughout the collaboration, some clinicians were not fully supportive of the undertaking. In the regional site where only a few clinicians were active in the breast cancer field, linking into meetings at other sites was considered an unnecessary undertaking in an already busy working week. The clinicians could not perceive any further benefits either for themselves or for their patients. The lesson to be learnt from this aspect of the Project is that for urban and rural multidisciplinary links to work, the potential benefit of such links to clinicians and to patients needs to be apparent from the outset.

Other lessons learnt from Collaboration 4, which were also apparent from the experiences of the three participating collaborations, included: the difficulty of trying to change long-established practice patterns; the importance of having at least one champion for the initiatives at each participating site; the benefits of modifying an existing meeting rather than trying to establish a new one; and the need for considerable organisational assistance to establish new meetings.

Other areas where little or no change was evident between study phases were those in which standards of care were already high at the outset of the study and remained so at the end of the study. For example, in both study phases clinicians reported that women were typically informed of their diagnosis by either a surgeon or general practitioner and never by a junior doctor or nurse. Further examples were evident in the findings of the clinical audit and consumer survey.

Change was also not evident in the level of collaboration reported between team members outside the multidisciplinary treatment planning meetings. The *Principles of Multidisciplinary Care* identify collaborative working links as an important component supporting a multidisciplinary approach. The lack of reported change could indicate that collaboration was already perceived as adequate or that such effects may take time to emerge or that structural barriers to collaboration exist.

Methodological constraints on the Demonstration Project may also have impacted on the ability of the evaluation to detect change over a limited timeframe. It is likely that over a longer timeframe, structural and procedural changes implemented will have an observable impact on the management of women with breast cancer. Other methodological restrictions included that only women with early breast cancer were considered eligible for the cohorts for the clinical audit and consumer survey (and hence improvements for women with advanced or *in situ* disease were not investigated for these tools) and some samples were too small for subset analysis or change detected within the Project timeframe only reached borderline significance.

Summary and recommendations

The *Principles of Multidisciplinary Care* developed to guide and evaluate strategy implementation were a useful and valid framework

The framework is flexible to allow strategies to be tailored according to local services and needs, and could be applied readily to other cancers, health care systems and diseases, particularly chronic conditions requiring input from a range of health care professionals.

Using these Principles, clinicians were able to:

- establish regular dedicated treatment planning meetings
- improve attendance of core disciplines at meetings
- incorporate the breast care nurse as a team member
- improve coordination and continuity of care for women with breast cancer and streamline management pathways
- increase consideration of different treatment options and links to other specialty services.

Recommendation 1

That the *Principles of Multidisciplinary Care* developed for breast cancer be used as the basis for developing similar frameworks for other cancers and other chronic diseases requiring multidisciplinary input.

Successful and sustainable multidisciplinary case conferencing requires a minimum set of conditions

These conditions include:

- strong leadership and chairing skills sufficient to enable full participation of all disciplines
- supporting infrastructure (eg, venue, facilities, equipment)
- sound preparation of relevant materials and information in advance of meetings
- inclusion of all disciplines and mutual respect between participants leading to productive group dynamics
- incentives for participants to attend meetings
- timely communication of the outcomes of case discussions to the woman concerned, and/or to her general practitioner.

Recommendation 2

That a brief user-friendly guide for establishment, preparation and support for multidisciplinary meetings be developed for use by health service providers.

There are a number of incentives for clinicians and the health system to participate in multidisciplinary care

These incentives include:

- patient care is more likely to be evidence-based with implications both for clinical outcomes and cost-effectiveness
- all treatment options can be considered, and treatment plans tailored for individual patients
- referral pathways are more likely to be streamlined
- clinicians have enhanced educational opportunities
- meetings provide opportunities for clinicians to interact with colleagues.

Although the clinical audit showed that clinical practice during the pre-implementation phase of the *National Multidisciplinary Care Demonstration Project* was largely in accord with guideline recommendations, nevertheless the Project provided evidence that significant improvements in practice in line with current and best practice recommendations also occurred.

Recommendation 3

That the National Cancer Plan and National Service Improvement Frameworks should explicitly quantify:

- efficiency dividends for institutions
- service improvement implications for patients

in order to promote the benefits of multidisciplinary care.

The Project demonstrated benefits of MDC for women undergoing treatment for breast cancer in the Australian context

Although the Project was not expected to provide quantitative evidence of improved clinical outcomes it can be anticipated that, as reported in the international literature, clinical outcome improvements will follow long-term implementation of MDC strategies.

Positive outcomes for women receiving treatment for breast cancer in this Project included:

- increased perception by women that their care was being managed by a team
- greater likelihood of receiving care in accord with the guidelines, including psychosocial support
- increased access to information, particularly about psychosocial and practical support.

Recommendation 4

That clinical outcome studies to establish the benefits of multidisciplinary care for patients with other cancers and chronic diseases, such as diabetes, within the Australian health care system be encouraged in order to provide an evidence base for broader implementation of multidisciplinary care.

A principal conclusion to be drawn from this Project is that the presence of a breast care nurse in a multidisciplinary team is beneficial both for the women and the clinicians

The breast care nurse enhanced continuity of care and communication about treatment, as well as the recognition by other clinicians of psychosocial issues and the need for appropriate referral.

Recommendation 5

That the role and effectiveness of breast care nurses is supported at all levels by:

- informing health service providers of the benefits of the breast care nurse role in the provision of multidisciplinary care
- promoting the adoption of the core competencies currently being developed by the National Breast Cancer Centre for the breast care nurse role, to nurse training programs nationally
- providing opportunities for nurses caring for women with breast cancer to access specialist training to support that role.

Barriers encountered in the implementation of MDC strategies included resistance to change; lack of time, resources and clinical staff; and the challenge of covering large geographical areas

In overcoming these barriers, the Project identified several key resource requirements for MDC:

- local clinical opinion leaders acting as advocates for MDC are crucial in lobbying staff and overcoming initial resistance
- the difficulty of changing long-established practice patterns should not be underestimated and should be addressed with evidence of benefits from new approaches
- administrative staff can greatly reduce the workload of clinicians in the set-up and coordination of meetings
- support is needed from senior hospital administration in providing meeting infrastructure such as an appropriate venue, and equipment, including telecommunications assistance to overcome the challenge of geographical remoteness.

Recommendation 6

That the establishment and maintenance of multidisciplinary care meetings must be adequately and explicitly resourced by health service providers. Affordability would be enhanced with broader application to other cancers and chronic diseases to amortise infrastructure costs. Areas in which generalisation is already occurring should be studied.

The Project has illuminated aspects of the cost of implementing MDC

It was beyond the brief and the design of this Project to balance costs against outcomes but the analysis indicates that MDC is feasible, given appropriate infrastructure planning and sharing.

- The cost of implementing MDC strategies was dependent on the level of multidisciplinary initiatives already in place at a facility. Costs were higher for newly established strategies compared with adaptation of existing strategies.
- Significant personal time was needed to implement new strategies such as treatment planning meetings. While this does not represent a direct cost to the health service, it should be considered in models of MDC.
- The cost of staff attendance at case conference and educational meetings was dependent on the number and type of attendees and the length and frequency of meetings.
- The average cost per meeting and per case presented at case conference meetings tended to decrease as meetings became better established.
- The use of existing facilities, such as hospital meeting rooms and equipment from other groups reduced the overall cost.
- Capital and equipment costs were significant at some sites but were reduced by cost sharing between different departments and disciplines.
- While travel and accommodation costs can be reduced using video-/teleconferencing, the technology set-up and associated costs, and difficulties in finding mutually acceptable meeting times were barriers to the use of such technology.

Recommendation 7

That hospital funding models and specialist and general practitioner payment schedules should be modified to support the implementation of multidisciplinary care strategies, given their broad application across a number of chronic diseases.

References

1. Priorities for Action in Cancer Control 2001–2003. Cancer Strategies Group. Canberra: National Health Priority Action Council, 2001
2. Clinical Oncological Society of Australia, The Cancer Council of Australia and the National Cancer Control Initiative. *Optimising Cancer Care in Australia*. Melbourne: National Cancer Control Initiative, 2003.
3. House of Representatives Standing Committee on Community Affairs. *Report on the Management and Treatment of Breast Cancer in Australia*. Canberra: Australian Government Publishing Service, 1995.
4. NHMRC National Breast Cancer Centre. *Clinical Practice Guidelines for the Management of Early Breast Cancer. 1st edition*. Canberra: National Health and Medical Research Council, 1995.
5. Chang JH, Vines E, Bertsch H, Fraker DL *et al*. The impact of a multidisciplinary breast cancer center on recommendations for patient management. *Cancer* 2001; 91(7): 1231–1237.
6. Sainsbury R, Hayward B, Johnston C, Round C. Influence of clinician workload and patterns of treatment on survival from breast cancer. *Lancet* 1995; 345: 1265–1270.
7. Gillis CR, Hole DJ. Survival outcome of care by specialist surgeons in breast cancer. *BMJ* 1996; 312: 145-148.
8. Gabel M, Hilton NE, Nathanson SD. Multidisciplinary breast cancer clinics. Do they work? *Cancer* 1997; 79(12): 2380–2384.
9. NHS Executive. *Manual of Cancer Services Standards*. December 2000.
10. Canadian Strategy for Cancer Control (CSCC). *Canadian Strategy for Cancer Control*. Ontario: CSCC; 2002.
11. Institute of Medicine (IOM) National Cancer Policy Board. *Ensuring Quality Cancer Care*. Washington: National Academy Press; 1999.
12. August DA, Carpenter LC, Harness JK *et al*. Benefits of a multidisciplinary approach to breast care. *J Surg Oncol* 1993; 53: 161–167.

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13. Dixon JM, Leonard RC. Specialist surgeons and survival in breast cancer. A multidisciplinary approach is needed [letter; comment]. *BMJ* 1996; 312: 1155–1156.
 14. Zorbas H, Barraclough B, Rainbird K, Luxford K, Redman S. Multidisciplinary care for women with early breast cancer in the Australian context: what does it mean? *MJA* 2003;179:528–531.
 15. Hill D, Jamrozik K, White V *et al.* Surgical management of breast cancer in Australia in 1995. Woolloomooloo (NSW): NHMRC National Breast Cancer Centre, 1999.

Appendix I: Project team, Steering Committee and Site Selection Subcommittee members

Project team membership

- Professor Sally Redman, former CEO (February 1999 – December 2003)
- Professor Christine Ewan, CEO (April 2003 – December 2003)
- Dr Helen Zorbas, Clinical Director/Acting CEO (February 1999 – December 2003)
- Dr Karen Luxford, Program Director (February 1999 – December 2003)
- Dr Anne Grunseit, Project Coordinator (February 1999 – December 1999)
- Dr Lyn Kemp, Project Coordinator (December 1999 – November 2000)
- Dr Kathy Rainbird, Project Coordinator (November 2000 – January 2003)
- Dr Alison Evans, Program Manager (March 2003 – December 2003)
- Ms Liz Temple, Project Officer (April 2002 – November 2002)

Steering Committee membership

The Steering Committee membership has included:

- Professor Christine Ewan (Chair), University of Western Sydney (NSW)
- Mr Bruce Barraclough, Royal Australasian College of Surgeons (NSW)
- Dr Fran Boyle, Department of Clinical Oncology, Royal North Shore Hospital (NSW)
- Mr Brian Conway, Ms Sandra Gagalowicz, Mr Andrew Benson, Ms Kristi Gooden, Dr Rosemary Knight and Ms Jen Smart, National Health Priorities and Quality Branch, Commonwealth Department of Health and Ageing (ACT)

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- Dr Paul Ireland and Professor Mark Elwood, National Cancer Control Initiative, Anti-Cancer Council of Victoria (VIC)
 - Ms Meg Lewis, Women’s Health Centre, Royal Adelaide Hospital (SA)
 - Mr Peter Malycha, Royal Australasian College of Surgeons (SA)
 - Emeritus Professor Tom Reeve, Australian Cancer Network (NSW)
 - Dr David Roder, Cancer Council South Australia (SA)
 - Professor Alan Rodger, William Buckland Radiotherapy Centre, Alfred Hospital (VIC)
 - Professor George Rubin, Australian Centre for Effective Healthcare, University of Sydney (NSW)
 - Dr Elizabeth Salisbury, ICPMR, Westmead Hospital (NSW)
 - Mr Glenn Salkeld and Associate Professor Judy Simpson, Department of Public Health & Community Medicine, University of Sydney (NSW)
 - Ms Onella Stagoll, Central Planning and Coordination Unit, BreastScreen Victoria (VIC)
 - Ms Lyn Swinburne, Consumer Representative (VIC)
 - National Multidisciplinary Care Demonstration Project Team of the Centre

Collaboration representatives on the Steering Committee

- Associate Professor Richard Bell, Barwon & Western Breast Consortium (VIC)
- Professor Peter Donnelly and Dr Richard Turner, North Queensland Breast Cancer Collaboration (QLD)
- Dr Craig Lewis, Prince of Wales Hospital and Associated Rural Centres Collaboration (NSW)
- Mr Bruce Mann and Ms Meron Pitcher, North Western Health and Ballarat Health Services Collaboration (VIC)

Site Selection Subcommittee members

The Steering Committee appointed a Site Selection Subcommittee to recommend the collaborations for participation in the Demonstration Project. Members included:

- Emeritus Professor Tom Reeve (Chair)
- Mr Peter Malycha (breast surgeon)
- Ms Lyn Swinburne (consumer representative)
- Mr Andrew Benson (Commonwealth representative)
- Ms Sandra Gagalowicz (Commonwealth representative)
- Professor Tom Anderson (visiting pathology fellow from Scotland and international member of the Site Selection Subcommittee).

Appendix II: Project timeline

Phases	Start-up phase							Implementation phase							Post-implementation phase																
	2000							2001							2002																
Task	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cohort of women									■	■	■	■	■	■	■	■	■	■													
Evaluation Components	Consumer survey		■																		■	■	■	■	■						
	Clinical audit		■																		■	■	■	■	■						
	Log book	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■											
	Clinician survey	■	■															■	■												
	Acceptability																	■	■												
	Cost analysis#	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Analysis and report			■	■	■	■	■								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		

Cost analysis conducted in conjunction with the clinical audit, log book and clinician survey, and telephone interviews and site visits during start-up and post-implementation phases



Cohort of women defined by date of diagnosis to be subjects for the consumer survey and clinical audit



Pre-test data collection



Post-test data collection



Ongoing processes

Appendix III: List of hospitals participating in the *National Profile Study of Multidisciplinary Care*

Hospital	State
Alice Springs Hospital	NT
Ashford Hospital	SA
Atherton District Hospital	QLD
Austin and Repatriation Medical Centre	VIC
Bankstown Hospital	NSW
Bathurst Base Hospital	NSW
Box Hill Hospital	VIC
Bundaberg Base Hospital	QLD
Byron Bay District Hospital	NSW
Central Wellington Hospital	VIC
Coffs Harbour Base Hospital	NSW
Epworth Hospital	VIC
Freemasons Hospital	VIC
Gosford Hospital	NSW
Gosnells Family Hospital	WA
Goulburn Base Hospital	NSW
Hunter Valley Private Hospital	NSW
John Hunter Hospital	NSW
Linacre Private Hospital	VIC
Liverpool Hospital	NSW
Manly Hospital	NSW
Masada Private Hospital	VIC
Mater Misericordiae Hospital (North Sydney)	NSW
Mercy Hospital	WA
Mitcham Private Hospital	VIC
Monash Medical Centre	VIC
Mount Gambier District Health Services	SA
Newcastle Misericordiae Hospital	NSW

Noarlunga Health Services	SA
North West Regional Hospital Burnie	TAS
Peter MacCallum Cancer Institute	VIC
Port Macquarie Hospital	NSW
Princess Alexandra Hospital	QLD
Redcliffe Hospital	QLD
Rockhampton Hospital	QLD
Royal Brisbane Hospital	QLD
Royal Prince Alfred Hospital	NSW
Sandringham District Hospital	VIC
Shellharbour Hospital	NSW
Sir Charles Gairdner Hospital	WA
St Andrews Hospital	SA
St Francis Xavier Cabrini	VIC
St Georges Hospital	NSW
St John of God Hospital, Perth	WA
St John of God Hospital, Bunbury	WA
St Vincents Hospital, Sydney	NSW
St Vincents Hospital Bathurst	NSW
Stanthorpe Public Hospital	QLD
Stawell District Hospital	VIC
Sunshine Coast Haematology and Oncology Clinic	QLD
Sydney Adventist Private Hospital	NSW
The Alfred Hospital	VIC
The Angliss Hospital	VIC
The Canberra Hospital	ACT
The Maitland Hospital	NSW
The Queen Elizabeth Hospital	SA
The Wesley Haematology/Oncology	QLD
Toowoomba Hospital	QLD
Wangaratta District Base Hospital	VIC
Westmead Hospital	NSW

Appendix IV: Cost of multidisciplinary care

Cost summary for Collaboration I

	Cost item	Baseline (6 months)	Start-up (8 months)	Implementation (7 months)	Post- implementation (6 months)
A	Staff attendance at treatment planning meetings ^a	Nil	3222.35	25,614.31	31,766.79
B	Capital & equipment	No data	11,500	379.50	0.00
C	Teleconferencing	No data	0.00	0.00	0.00
D	Meeting organisation ^b	No data	5316.85	4652.25	3987.64
E	Other meeting related costs ^c	No data	1244.18	1307.41	970.63
F	Total cost of education meetings ^a	16,072.29	9749.30	15,439.65	9730.51
G	Breast care nurse (non-meeting) ^d	No data	0.00	0.00	4049.27
H	Project Manager/Coordinator ^e	No data	19,055.73	16,673.77	14,291.80
I	Staff personal time ^f	No data	34,916.00	18,538.00	15,548.00
J	Travel & accommodation ^g	No data	1036.02	906.52	777.01
K	Other costs ^h	No data	4407.28	1333.89	1143.33
L	Total costs per phase	16,072.29	90,447.71	84,845.30	82,264.98
M	Total meeting costs (A+B+C+D+E)	0.00	21,283.38	31,953.46	36,725.06
N	Number of treatment planning meetings (number of sites)	0	2 (1)	21 (2)	23 (2)
O	Average staff attendance cost per meeting (A/N)	0.00	1611.17	1219.73	1381.16
P	Average total cost per meeting (M/N)	0.00	10,641.69	1521.59	1596.74
Q	Number of patients	No data	4	49	58
R	Average total meeting cost per patient (M/Q)	No data	5320.85	652.11	633.19
S	Number of cases presented	No data	4	56	67
T	Average staff attendance cost per case presented (A/S)	No data	805.59	457.40	474.13
U	Average total meeting cost per case presented (M/S)	No data	5320.85	570.60	548.14

Information from log book and supplementary data where specified.

^a Baseline calculated from information provided on Baseline costing study sheets.

^b From project budget summary: \$13,956.74 spent on secretarial wages for entire Project. Pro-rated.

^c Includes the costs associated with room hire, food and catering, from logbook data. Catering of \$2872.22 from project budget summary pro-rated.

^d The breast care nurse salary of \$9500 (project budget summary), less breast care nurse meeting attendance (log book). ^e From project budget summary: \$50,021.30 spent on local evaluator wages for entire Project. Pro-rated.

^f Collaboration retrospectively estimated personal time. Costed at appropriate salary rates.

^g Log book data (\$0) and project budget summary: \$619.55 travel costs and \$2100 project worker costs. Pro-rated.

^h From project budget summary: stationery \$4001.66 pro-rated equally; advertising (\$880.75+706.75), education (\$732) and incorporation (\$563.34) assumed to occur in start-up.

Cost summary for Collaboration 2

	Cost item	Baseline (6 months)	Start-up (8 months)	Implementation (7 months)	Post- implementation (6 months)
A	Staff attendance at treatment planning meetings ^a	15,500.40	15,488.94	30,954.72	32,167.42
B	Capital & equipment ^b	No data	0.00	328.46	281.54
C	Teleconferencing ^c	No data	938.66	765.06	231.48
D	Meeting organisation ^d	No data	5300.05	4694.33	3937.18
E	Other meeting related costs ^e	No data	100.00	0.00	0.00
F	Total cost of education meetings	No data	11,905.69	4897.69	4964.09
G	Breast care nurse (non-meeting) ^f	No data	0.00	0.00	0.00
H	Project Manager/Coordinator ^g	No data	14,898.55	39,227.88	33,703.30
I	Staff personal time ^h	No data	22,130.50	9800.65	0.00
J	Travel & accommodation ⁱ	No data	0.00	1753.27	1502.80
K	Other costs ^j	No data	4644.81	1741.30	1492.54
L	Total costs per phase	15,500.40	75,407.19	94,163.36	78,280.35
M	Total meeting costs (A+B+C+D+E)	15,500.40	21,827.65	36,742.57	36,617.62
N	Number of treatment planning meetings (number of sites)	24	31 (3)	59 (3)	43 (3)
O	Average staff attendance cost per meeting (A/N)	645.85	499.64	524.66	748.08
P	Average total cost per meeting (M/N)	645.85	704.12	622.76	851.57
Q	Number of patients	No data	82	186	155
R	Average total meeting cost per patient (M/Q)	No data	266.19	197.54	236.24
S	Number of cases presented	No data	109	231	198
T	Average staff attendance cost per case presented (A/S)	No data	142.10	134.00	162.46
U	Average total meeting cost per case presented (M/S)	No data	200.25	159.06	184.94

Information from log book and supplementary data where specified.

^a Baseline calculated from information provided on Baseline costing study sheets.

^b From financial statements \$610 spent on equipment during implementation and post-imp period. Pro-rated.

^c From financial statements \$732.41 spent on telephone and fax during start-up and \$501.54 during implementation and post-imp period. Cost in latter two periods is pro-rated.

^d Cost based on 0.5 day registrar time + 1 hr secretarial support.

^e Includes the costs associated with room hire, food and catering, from logbook data.

^f The breast care nurse cost was pro-rated using 'salaries' \$14,982.22 during start-up and \$73,023.82 during implementation and post-imp. from the financial statements less breast care nurse meeting attendance (log book).

^g May form part of 'salaries' amount listed under breast care nurse.

^h Based on estimate of personal time by senior clinician; costed at appropriate salary rates.

ⁱ Log book data (\$0) and financial statements \$3256.07 travel costs. Pro-rated between implementation and post-implementation

^j From financial statements. During start-up: \$4348 overheads & \$296.81 other; during implementation and post-implementation: overheads \$1739.14, printing & copying \$679, and consumables \$815.70 (other of \$244.35 assumed to have been counted in start-up). Cost in latter two periods is pro-rated.

Cost summary for Collaboration 3

	Cost item	Baseline (6 months)	Start-up (8 months)	Implementation (7 months)	Post- implementation (6 months)
A	Staff attendance at treatment planning meetings ^a	13,206.55	17,688.37	14,098.71	12,571.10
B	Capital & equipment	No data	0.00	0.00	0.00
C	Teleconferencing	No data	0.00	0.00	0.00
D	Meeting organisation ^b	No data	4426.10	3920.26	3287.96
E	Other meeting related costs ^c	No data	0.00	0.00	0.00
F	Total cost of education meetings	No data	0.00	1868.69	544.56
G	Breast care nurse (non-meeting) ^d	No data	47,401.76	41,476.54	35,551.32
H	Project Manager/Coordinator ^e	No data	0.00	0.00	0.00
I	Staff personal time ^f	No data	2,631.80	0.00	0.00
J	Travel & accommodation ^g	No data	572.70	1316.65	0.00
K	Other costs ^h	No data	10.00	0.00	0.00
L	Total costs per phase	13,206.55	72,730.73	62,680.84	51,954.94
M	Total meeting costs (A+B+C+D+E)	13,206.55	22,114.47	18,018.97	15,859.06
N	Number of treatment planning meetings (number of sites)	26	25 (1)	25 (1)	20 (1)
O	Average staff attendance cost per meeting (A/N)	507.94	707.53	563.95	628.56
P	Average total cost per meeting (M/N)	507.94	884.58	720.76	792.95
Q	Number of patients	No data	90	104	86
R	Average total meeting cost per patient (M/Q)	No data	245.72	173.26	184.41
S	Number of cases presented	No data	103	110	89
T	Average staff attendance cost per case presented (A/S)	No data	171.73	128.17	141.25
U	Average total meeting cost per case presented (M/S)	No data	214.70	163.81	178.19

Information from log book and supplementary data where specified.

^a Baseline calculated from information provided on Baseline costing study sheets.

^b This cost was not recorded but is estimated using the methods described in the report.

^c Includes the costs associated with room hire, food and catering.

^d The breast care nurse salary of \$5925.22 per month (report) less breast care nurse meeting attendance (from log book = \$0). Higher than actual costs as a more senior nurse rate has been used.

^e Not employed.

^f Collaboration estimated personal time during teleconference. Costed at appropriate salary rates.

^g From ledger summary: \$1050 travel from 8/00-6/01 (pro-rated at \$95.45/month) and \$839.40 from 8-9/01.

^h From ledger summary: \$10 for stationery, assumed to be during start-up.