

Creating an integrated vision by collocating health organisations: herding cats or a meeting of minds?

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Abstract

The Brisbane South Centre for Health Services Integration (BSCHSI) initiative used a collocation strategy to integrate local service delivery across three different health organisations. Physical collocation was combined with validated integration strategies to improve organisational operations among five different work teams involving 90 different individuals. Enhanced communication, increased knowledge of collocating groups, and the development of collaboration and partnerships were key positive outcomes.

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What is known about the topic?

There is little written about the combination of a physical collocation of health organisations with validated integration strategies.

What does the study add?

This study articulates and evaluates this approach to a collocation initiative between diverse health care organisations in Brisbane South.

What are the implications for practice?

Health executives and clinicians undertaking this work in our changing health care environment can build on the learnings from this Australian initiative.

Greater than the tread of mighty armies is an idea whose time has come.

Victor Hugo

HEALTH SYSTEMS CONFRONT the need to better meet the care requirements of an ageing population with an increasing prevalence of chronic disease. Central to this is more effective integration of acute and community care and, in Australia, integration of state and Commonwealth-funded services.^{1,2} In 1995 the Mater Misericordiae Hospital, Brisbane, ("Mater"), a large tertiary adult, paediatric, maternity and private hospital in Brisbane South, commenced a 10-year initiative to forge a shared approach to health care with community providers. By 2003 Mater had developed common datasets and growing e-connectivity between hospital and community providers, numerous integrated care pathways and a culture which valued the importance of hospital/community provider linkage in delivering safe, high quality care. Most of these initiatives were with the Domiciliary Allied Health Acute Care and Rehabilitation Team (DAART), which provided community allied health services across the entire Brisbane South area, and the Mater Centre for

Acronyms used in this article

BISDIV	Brisbane Inner South Division of General Practice
BISEP	Brisbane Inner South E-referral Project
BSCHS	Brisbane South Community Health Service
BSCHSI	Brisbane South Centre for Health Service Integration
CSB	Community Services Building
DAART	Domiciliary Allied Health Acute Care & Rehabilitation Team
DoHA	Department of Health and Ageing
MCIHC&GP	Mater Centre for Integrated Health Care and General Practice
QH	Queensland Health

Integrated Health Care and General Practice (MCIHC&GP), which provided general practitioner and hospital integration liaison, education and research services across Mater's catchment zone.

In 2000 the opportunity arose to collocate key community services on the hospital campus, further promoting integrated care. Despite an increasing interest in collocation as an integration initiative internationally, and a "gut feeling" that this would enhance health service integration, there was little formal evidence of a positive relationship between collocation and integration, nor of specific collocation strategies to deliver improved care outcomes.³⁻⁵ Taylor and Bernardi described collocation of a public specialist mental health service with private psychiatrists in north Sydney, which demonstrated increased cooperation between sectors, and partially increased consumer choice and private practitioner availability.³ Kiesler and Cummings recognised that "close proximity among people had beneficial effects on interpersonal relations and group functioning",⁴ and both Kiesler and Cummings and Nardi and Whittaker noted the impact of face-to-face communication, shared physical space and frequency of spontaneous, informal communication on the strengthening of social and work ties, and improved information exchange.^{4,5}

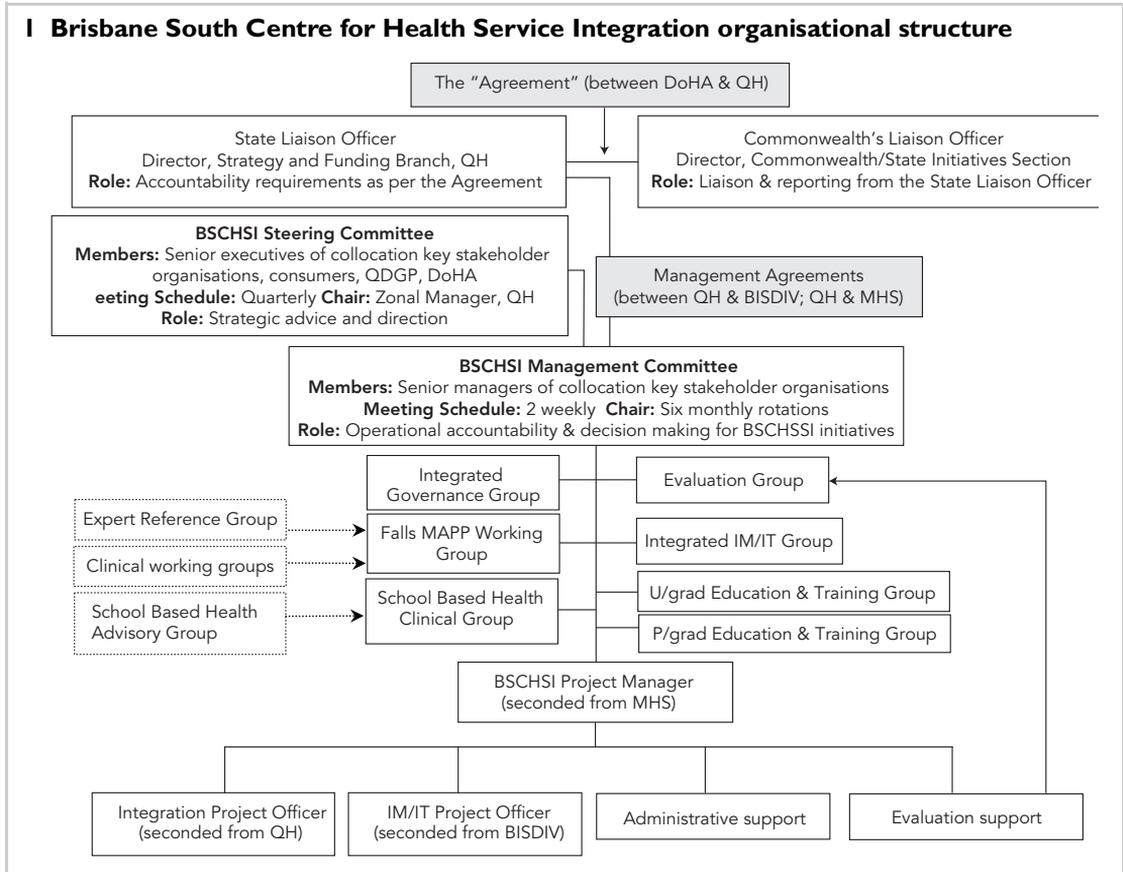
At numerous meetings with interested stakeholders, a draft methodology, evaluation and business plan were developed, and in 2002, the

concept was chosen as Queensland's site for the National GP/Hospital Best Practice Program. The Brisbane South Centre for Health Service Integration (BSCHSI) expression of interest was lodged in May 2002 and negotiations between the three key stakeholders — Brisbane South Community Health Service (Queensland Health [QH]), Mater (representing the MCIHC&GP and DAART), and Brisbane Inner South Division of General Practice (BISDIV) — regarding the collocation at the Community Services Building (CSB) on the Mater Campus began in earnest. The contracting stage provided difficult challenges, common among health service groups promoting new models of service delivery.³ The issues included the negotiation of new leases, space requirements (including provision of common meeting rooms), refurbishment (including differing information system and telecommunication requirements), identification of staff and centres appropriate for the move, and resolving issues as diverse as client access, change management, intellectual property and staff parking arrangements. The "Agreement" between the Department of Health and Ageing and Queensland Health as well as management agreements between key stakeholders were completed and signed in December 2003.

This paper focuses on evaluation of the collocation outcomes and documenting the impressions of personnel collocated at the centre regarding integration.

The collocation

The BSCHSI was established in July 2003, with DAART, MCIHC&GP and BISDIV having moved into the collocation building from December 2002, and team members from Brisbane South Community Health Service relocating progressively until April 2004. Brisbane South Community Health and DAART occupied the ground floor of the building and shared meeting and interview rooms. Similarly, BISDIV and MCIHC&GP shared meeting and lunch rooms on the second floor. All staff met for "Lunch and Learn" seminars and major meetings or social events in the second floor large meeting room. All



organisations shared a common resource directory and email list. Collocating organisations retained their own space with clear identity signage. This approach demonstrated the value given to the uniqueness of each organisation and their contribution to the health care system, while at the same time developing the opportunities to work more closely together with their collocating colleagues in the interest of better client care.

A governance structure, including Steering (strategic) and Management (operational) Committees, was established and support staff engaged (Box 1). Membership of the committees was contracted between the Department of Health and Ageing and Queensland Health. The Steering Committee members agreed to extend representation to the Queensland Divisions of General Practice and agreed to operate as a "body corporate" owned by all of the

collocating agencies. Dispute resolution, management of funds and intellectual property issues were included in the Management Agreements. Project staff were seconded from each of the organisations. The consumer representative from the state General Practice Advisory Council (GPAC) and a patient representative from acute care sat on the Steering Committee, and each clinical working group had a consumer representative.

BSCHSI's key collocation objective was to evaluate the impact of the physical collocation and the integration approach in developing an integrated health care culture among organisations and individuals on-site. The approach promoted improved integration outcomes with strategies and evaluation in three areas: communication and access, cultural change and teamwork, and commitment and incentives to integrate. This approach, known

2 Collocation strategies and activities

Strategies	Activities
Foster clinical and organisational leadership	Engage key clinicians, health service executives, organisations/groups, consumers and academics in BSCHSI initiatives
Provide joint planning opportunities, create a common vision	Multi-organisational collocation workshops to identify common integration initiatives
Identify areas of common energy / difficulty	Integrated project teams for each project initiative
Create shared contact databases and information dissemination infrastructure	Service directory of collocating organisations disseminated to all organisations/ individuals
Arrange regular multidisciplinary professional development opportunities	Multidisciplinary professional development with invitations to other relevant community/acute care providers Shared meeting/education rooms
Arrange regular “unstructured” opportunities for staff to integrate.	Shared physical space – lunch rooms, meeting rooms Social events, for example, footy tipping competition, Melbourne Cup celebration, Christmas party
Disseminate and celebrate the positive outcomes of closer organisational integration	Presentations and publication of outcomes
Commence staff exchanges	Placements arranged between primary and secondary care organisations
Provide communication opportunities	Allied health professionals provided face-to-face sessions with local GPs to introduce project initiatives

as the “3Cs” model of health care integration, had been used successfully in other initiatives.⁶

Our challenge was to combine the physical collocation and strategic interventions to deliver a successful integration outcome. Relevant collocation strategies based on the 3Cs integration model were instituted during the first months of the collocation (Box 2). These strategies were applied to each of the four key BSCHSI initiatives — integrated undergraduate and postgraduate multidisciplinary education; integrated clinical interaction between organisations/groups; the development of an integrated information technology and information management approach; and the development of an integrated governance model. Each initiative included relevant strategies from Box 2 as part of their intervention.

Evaluation

Key variables of interest were identified from the 3Cs model, and focus groups were held to explore these variables. Using the focus-group information, qualitative and quantitative data

were obtained from stakeholders using a tool, the “Move and Collocation (Mater Community Services Building) Questionnaire”, designed to explore pre and post perceptions of the collocation. Together with the relevant demographic information, participants’ views were sought on the collocation, including: physical aspects of the collocation from personal, and organisational perspectives; effect of the collocation on work and clients; and opportunities for networking. Responses were scored on a Likert scale of 1–5 (strongly disagree = 1; strongly agree = 5).

All operational and management staff members from the three participating organisations involved in the collocation (QH, Mater, and BISDIV) were surveyed before any intervention to determine their expectations. At Time 1 (May 2004) the questionnaire was administered to 90 staff members; and at Time 2 (March 2005) to 73 staff members. A response rate of 68% ($n = 61$) was achieved at T1 and 70% ($n = 51$) at T2 (Box 3). Seventeen staff members were no longer working at the CSB by the time the second survey was run and their replacements were only sur-

3 Response rate by group and time

Stakeholder group	Time	No. of staff surveyed	No. of respondents	Response rate (%)
Domiciliary Allied Health Acute Care & Rehabilitation Team	T1	27	20	74%
	T2	24	18	69%
Brisbane Inner South Division of General Practice	T1	10	10	100%
	T2	11	11	100%
Queensland Health — Adult Health Team	T1	12	7	58%
	T2	12	3	25%
Queensland Health — School Based Youth Health Team	T1	11	9	82%
	T2	8	6	75%
Queensland Health — Home Care	T1	18	15	83%
	T2	15	11	73%
Queensland Health — Other staff	T1	12	0	0
	T2	2	2	100%
Total	T1	90	61	68%
	T2	73	51	70%

veyed if they had started in the job 6 months before the final survey. The “Queensland Health – Other staff” sub-group (Box 3) consisted of non-collocated personnel who attended committee meetings or advisory groups. They were not involved in the analysis as they were not involved in the implementation of the intervention and are not included in the subsequent tables.

Statistical analysis

Descriptive statistics (means and standard deviations) and mean differences for each group were compared using paired *t*-tests. The Shapiro–Francia test was used to check for normality, and if not met, the non-parametric Wilcoxon signed rank test was used.⁷ Holm’s method was used to adjust for testing multiple hypotheses.⁸ Statistical significance is reported based on the conventional $P \leq 0.05$ level (two-tailed). Qualitative analyses were also performed, involving thematic analysis of the content.

Results

Physical aspects of the collocation

Participants were asked to rate their overall level of satisfaction with the physical aspects of the collocation

(very dissatisfied = 1 through to very satisfied = 5) from two perspectives: personal (Box 4) and organisational (Box 5). The questionnaire asked respondents to give their personal perspectives in the first section and then viewpoints from their organisation’s perspective in the final section of the questionnaire. Directions were specific regarding this in an attempt to achieve the objective of the separate questionnaire categories — the separation of the individual or personal attitude from the cultural beliefs of the organisation — and assess any differences. Questions covered satisfaction with parking, personal workspace, location, and facilities. For all organisations, overall satisfaction with general physical aspects of the collocation did not change significantly over time. However, across the organisations the mean satisfaction with “closeness to other collocating organisations” demonstrated a statistically significant increase between T1 and T2. This increase was noted for the personal perspectives ($P = 0.05$) (Box 4) and organisational perspectives ($P < 0.05$) (Box 5).

Effect of the collocation

Respondents were asked to rate collocation/integration variables on the same Likert scale. There

4 Personal perspective on the physical aspects of collocation (means and SD)

		Group 1 (mean [SD])	Group 2 (mean [SD])	Group 3 (mean [SD])	Group 4 (mean [SD])	Group 5 (mean [SD])	Overall (mean [SD])
	N (T1)	18	10	14	6	9	57
	N (T2)	17	11	11	3	5	47
Physical aspect							
Closeness to other collocating organisations	T1	3.94 (0.80)	3.70 (0.48)	3.79 (0.70)	3.00 (1.10)	2.89 (1.17)	3.51* (0.70)
	T2	4.06 (0.75)	4.09 (0.70)	3.82 (0.87)	3.33 (0.58)	3.20 (0.84)	3.80* (0.83)
Contact with other professionals	T1	4.11 (0.76)	3.70 (0.48)	3.64 (0.63)	2.83 (1.17)	3.00 (1.12)	3.58 (0.69)
	T2	4.12 (0.70)	4.09 (0.83)	3.82 (0.87)	3.33 (0.58)	2.67 (1.21)	3.78 (0.99)
Personal workspace	T1	3.72 (1.23)	3.90 (0.57)	4.07 (0.62)	2.67 (1.21)	2.22 (0.97)	3.79 (1.01)
	T2	4.50 (0.65)	3.73 (0.65)	3.36 (1.03)	2.33 (1.53)	2.80 (1.30)	3.68 (1.04)
Facilities available	T1	4.17 (0.71)	3.90 (0.57)	3.79 (0.70)	2.83 (1.17)	2.44 (1.42)	3.69 (0.99)
	T2	4.35 (0.61)	3.73 (0.74)	3.18 (1.67)	3.33 (0.58)	3.00 (1.41)	3.66 (1.16)
Location	T1	4.28 (0.58)	3.80 (0.79)	3.29 (1.14)	2.33 (1.37)	2.33 (1.41)	3.54 (1.09)
	T2	4.47 (0.62)	3.64 (0.67)	3.18 (0.98)	2.67 (1.53)	2.00 (1.41)	3.66 (1.14)
Parking — accessibility	T1	3.67 (1.24)	2.70 (1.06)	2.43 (1.10)	2.00 (1.55)	1.56 (0.88)	2.81 (1.41)
	T2	4.35 (0.61)	2.45 (1.37)	2.82 (1.54)	2.00 (1.00)	1.00 (0.00)	2.97 (1.48)
Parking — availability	T1	3.61 (1.20)	2.90 (1.10)	2.36 (1.10)	2.00 (1.55)	1.56 (0.88)	2.77 (1.36)
	T2	3.76 (1.4)	2.55 (1.37)	2.91 (1.64)	1.67 (0.58)	1.00 (0.00)	2.72 (1.52)
Overall satisfaction with physical aspects (for you personally)	T1	3.94 (0.64)	3.60 (0.70)	3.64 (0.93)	2.50 (1.23)	1.78 (1.09)	3.46 (1.07)
	T2	4.12 (0.60)	3.36 (0.67)	3.30 (1.06)	2.33 (1.56)	1.80 (1.30)	3.40 (1.09)

* $p=0.05$. T1 = Time 1; T2 = Time 2.

were statistically significant changes between T1 and T2 in three of the 13 variables: “knowledge of other collocating groups”, “potential for reduced duplication of services” and “professional relationship between people in non-collocating organisations” (Box 6). Also of interest was the trend to higher scores across all domains for Groups 1, 2 and 3 (who shared most integration strategies) and lower scores for groups 4 and 5 (who participated in fewer integration initiatives).

Participants were asked to rate their agreement with the statement “I have a great deal of knowledge about all other collocating groups”. There was a statistically significant difference in perceived knowledge between T1 (mean 2.67) and T2 (mean 3.06; $P=0.01$) (Box 6), with knowledge significantly higher at T2. The project initiatives involved both collocating and non-collocating organisations. For the question regarding improvement in relationships with people in affiliated (non-collocating) organisations,

the mean dropped significantly from 3.49 at T1 to 3.20 at T2 ($P<0.05$) (Box 6), that is, the expectation of relationships with non-collocating organisations before the project was greater than the experience of such relationships at T2.

No other effect variables showed statistically significant shifts between T1 and T2 (Box 6). However, common trends were observed in the group responses across almost all domains. In all instances, scores were high at T1 for Group 1, Group 2 and Group 3 and were maintained across the intervention. In contrast, scores for Group 4 and Group 5 were low at both T1 and T2, across all domains of interest (Box 6). While Groups 1, 2 and 3 (all from different organisations) had significant contact with each other in service planning and delivery, groups 4 and 5 had little such contact and were collocated without significant functional organisational overlap. Groups 3, 4 and 5 were operational sub-groups within one organisation.

5 Organisational perspective of physical aspects of collocation (means and SD)

		Group 1 (mean [SD])	Group 2 (mean [SD])	Group 3 (mean [SD])	Group 4 (mean [SD])	Group 5 (mean [SD])	Overall (mean [SD])
	N (T1)	11	9	13	6	4	43
	N (T2)	12	10	10	3	4	39
Physical aspect							
Closeness to the other collocating organisations	T1	4.10 (0.64)	3.80 (0.63)	3.73 (0.46)	3.57 (0.54)	2.33 (0.71)	3.67* (0.81)
	T2	4.22 (0.73)	4.18 (0.75)	3.64 (1.03)	3.33 (0.58)	2.83 (1.17)	3.92* (0.74)
Contact with other professionals	T1	4.25 (0.55)	3.70 (0.82)	3.67 (0.49)	3.57 (0.54)	2.33 (0.71)	3.67 (0.89)
	T2	4.19 (0.75)	4.20 (0.79)	3.80 (0.63)	3.33 (0.58)	2.17 (0.98)	3.78 (0.90)
Facilities available	T1	4.10 (0.72)	3.60 (0.70)	3.67 (0.62)	3.14 (0.90)	2.33 (1.00)	3.66 (0.97)
	T2	4.35 (0.70)	3.64 (0.67)	3.00 (1.10)	3.33 (0.58)	2.83 (0.75)	3.68 (0.93)
Personal workspace	T1	3.90 (0.91)	3.80 (0.42)	4.00 (0.54)	2.57(0.98)	2.33(1.23)	3.79 (0.89)
	T2	4.22 (0.65)	3.45 (0.69)	3.18 (1.08)	2.33 (1.53)	2.17 (1.17)	3.62 (0.99)
Location	T1	4.25 (0.55)	3.70 (0.68)	3.47 (0.83)	2.86 (0.90)	1.78 (0.67)	3.59 (1.02)
	T2	4.33 (0.69)	3.55 (0.69)	3.18 (0.98)	2.67 (1.53)	1.67 (1.21)	3.62 (0.99)
Parking – accessibility	T1	3.75 (0.97)	2.70 (0.68)	2.47 (1.06)	2.14 (1.07)	1.56 (0.73)	2.97 (1.20)
	T2	3.50 (0.92)	2.55 (0.93)	2.73 (1.91)	2.33 (1.16)	1.33 (0.82)	2.95 (1.17)
Parking – availability	T1	3.70 (1.17)	2.70 (0.68)	2.27 (1.03)	2.14 (1.07)	1.56 (0.73)	2.90 (1.29)
	T2	3.00 (1.14)	2.45 (1.04)	2.73 (1.91)	2.67 (1.53)	1.33 (0.82)	2.74 (1.19)
Overall satisfaction with physical aspects (for your clients)	T1	4.00 (0.65)	3.70 (0.48)	3.67 (0.82)	2.71 (0.95)	1.67 (0.71)	3.54 (1.05)
	T2	4.06 (0.64)	3.36 (0.67)	3.09 (1.04)	2.33 (1.53)	1.67 (1.21)	3.49 (1.00)

* $P < 0.05$. T1 = Time 1; T2 = Time 2.

Professional relationships

Four questions focused on the quality of *professional relationships* between individuals and organisations. Across the organisations, the means were stable from 3.6 at T1 to 3.7 at T2, indicating that, on average, initial expectations for enhanced professional relationships had been met (Box 6). Participants were also asked to rate their level of knowledge of all 16 organisations collocated at the CSB (very low = 1; very high = 5). Means increased in all cases, with a statistically significant increase for knowledge of the School Based Youth Health Team ($P < 0.01$), BSCHSI ($P < 0.05$) and the Integrated Child Development Network ($P < 0.05$).

The DAART program receives referrals from a broad range of organisations. From 2003–04 to 2004–05 DAART noted a 7.7% increase in referrals, due to a general increase in demand. However, the referrals to DAART increased sub-

stantially from both of the new BSCHSI partners, with a 421% increase from Brisbane South Community Health Service and a 235% increase from GPs from BISDIV. The majority of these clients were referred under the Home and Community Care program (HACC), through which DAART is funded to deliver allied health services in the community. Access to allied health has always been an issue for these clients. The increased knowledge of the role of collocating organisations, enhanced communication between these organisations and the improved partnership approach demonstrated by the project, are the likely factors for this marked trend.

Positive outcomes of the collocation

Participants were asked to list the most positive outcomes of the collocation. Enhanced communication, increased knowledge of collocating

6 Perceptions about the effect of collocation on work and client (means and SD), frequency of responses by group

		Group 1 (mean [SD])	Group 2 (mean [SD])	Group 3 (mean [SD])	Group 4 (mean [SD])	Group 5 (mean [SD])	Overall (mean [SD])
	N (T1)	18	10	14	7	8	57
	N (T2)	18	11	11	3	6	49
Perception							
Professional relationships between people in affiliated (non-collocating) organisations will be/have been improved	T1	3.67 (0.84)	3.60 (0.70)	3.57 (0.51)	2.86 (0.58)	2.50 (1.31)	3.49 [†] (0.82)
	T2	3.29 (0.69)	3.45 (0.69)	3.09 (0.54)	3.33 (0.58)	2.17 (1.17)	3.20 [†] (0.76)
There is potential for reduced duplication of services (T1)/ There has been a reduction in duplication of services (T2)	T1	3.94 (0.66)	3.90 (0.74)	3.79 (0.43)	3.29 (0.58)	2.25 (1.17)	3.74 [‡] (0.83)
	T2	2.94 (0.73)	3.40 (0.52)	3.63 (0.67)	3.00 (0.00)	2.17 (0.98)	3.01 [‡] (0.93)
I have a great deal of knowledge about all other collocating groups	T1	2.67 (0.91)	2.70* (0.68)	2.58 (0.79)	2.43 (0.54)	2.25 (0.71)	2.67 [†] (0.76)
	T2	2.78 (0.81)	3.55* (0.69)	3.00 (0.89)	3.33 (0.58)	2.83 (0.98)	3.06 [†] (0.89)
Quality of professional relationships between members of collocating organisations will be/has been enhanced	T1	4.00 (0.59)	3.90 (0.99)	3.79 (0.58)	3.43 (0.79)	2.13 (1.13)	3.67 (0.93)
	T2	3.89 (0.76)	3.73 (0.79)	3.73 (0.79)	3.67 (0.58)	2.50 (0.84)	3.75 (0.97)
My organisation's ability to meet needs of clients will be/has been enhanced	T1	3.78 (0.65)	3.60 (0.70)	3.71 (0.83)	2.43 (0.79)	1.75 (0.89)	3.39 (0.90)
	T2	3.73 (0.58)	3.82 (0.60)	3.55 (0.82)	2.67 (1.53)	1.67 (0.82)	3.50 (0.97)
Clients health-related outcomes will be/have been improved	T1	4.11 (1.4)	3.90 (1.9)	3.64 (1.01)	2.67 (0.82)	1.63 (0.74)	3.29 (0.94)
	T2	3.39 (0.78)	3.22 (0.44)	3.64 (0.67)	3.33 (0.58)	1.60 (0.89)	3.35 (1.02)
Knowledge of services provided by collocation groups will be/has been increased	T1	4.00 (0.59)	4.00 (0.94)	4.00 (0.39)	3.71 (0.49)	2.38 (1.06)	3.83 (0.78)
	T2	3.61 (0.85)	3.73 (0.47)	3.64 (0.92)	3.67 (0.58)	2.50 (1.05)	3.61 (0.80)
Amount of communication between collocating service providers will be/has been increased	T1	4.11 (0.58)	4.10 (0.88)	3.93 (0.48)	3.00 (0.58)	2.25 (1.17)	3.77 (0.88)
	T2	3.71 (0.85)	4.09 (0.83)	3.82 (0.75)	3.33 (0.58)	2.17 (1.17)	3.71 (1.05)
I will/have develop/ed valuable new professional relationships	T1	3.94 (0.54)	4.10 (0.88)	3.86 (0.66)	3.43 (0.54)	3.00 (1.56)	3.74 (0.78)
	T2	3.33 (0.84)	3.82 (0.60)	3.91 (0.70)	3.67 (0.58)	1.83 (0.98)	3.57 (0.92)
Quality of relationships between organisations, including understanding and trust, will be/has been enhanced	T1	4.00 (0.59)	3.90 (0.88)	3.71 (0.73)	3.00 (1.00)	2.13 (0.99)	3.69 (0.86)
	T2	3.78 (0.65)	3.82 (0.75)	3.73 (0.65)	3.33 (0.58)	1.83 (0.98)	3.56 (1.03)
Service planning and coordination between service providers will be/has been enhanced	T1	4.11 (0.58)	3.7 (0.82)	3.86 (0.66)	3.14 (0.69)	2.00 (0.93)	3.64 (0.90)
	T2	3.50 (0.86)	3.82 (0.60)	3.64 (0.81)	3.33 (0.58)	1.67 (0.52)	3.42 (1.02)
Future planning of activities to connect multiple services will be/has been enhanced	T1	4.06 (0.87)	4.20 (0.63)	3.50 (0.94)	3.14 (1.07)	2.13 (0.84)	3.60 (0.95)
	T2	3.72 (0.75)	4.00 (0.47)	3.73 (0.79)	3.67 (0.58)	1.83 (0.75)	3.57 (1.04)
Potential for resources to be used more effectively/ Resources have been used more effectively	T1	3.67 (0.97)	3.90 (0.99)	3.43 (0.85)	3.00 (1.00)	1.50 (0.76)	3.40 (1.12)
	T2	3.44 (0.92)	3.10 (0.74)	3.27 (0.65)	2.67 (1.53)	2.80 (1.30)	3.34 (0.91)

* $P=0.05$. $† 0.05 < P \leq 0.01$. $‡ P < 0.01$. T1 = Time 1; T2 = Time 2.

7 Participant perceptions of the most positive outcomes and demonstrated benefits of the collocation

Positive outcome	Benefits demonstrated during the project	Comments from stakeholders
Improved communication	Improved quality of the communication, including, more immediate, timely, open and effective communication	Being able to get an answer to a query almost at once. Good exchange of information with DAART — better outcomes for clients. Being able to communicate more freely with other services. Talking to other agencies face to face. Face to face access with other organisations.
	Enhanced communication opportunities assisting with, better patient outcomes, effective problem solving, understanding the roles of others, better rapport with other professionals and exchange of information	Communicating more effectively. Establishing better rapport since meeting other organisations. Communication opportunities enhanced. Problem solving achieved. Understanding of roles of others. More effective communication outcomes for client care. Communication opportunities enhanced. Problem solving achieved. Understanding of roles of others. Enabled screening to take place due to regular communication with home care.
Increased knowledge	Increased knowledge linked increased knowledge of other services to the development of closer working relationships with professionals from other organisations and better referrals	The increased knowledge staff have regarding the others in the collocation. We are beginning to develop closer working relationships. As receptionist I know other organisations to direct clients to who have phoned us or who present as walk-ins. Learning about other services.
Improved opportunity for collaboration & partnerships	Allowed and promoted multi-organisational planning and collaboration	Joint planning. Closer working relationships. Common initiatives. Working towards common goals/objectives. Increase linkages with more care and development of occupational therapy program. The opportunity to build partnerships and collaborate has been a very positive outcome from collocating and I believe is still just in its infancy with great potential. The negative is as previously stated the physical — the building and its location.
Improved workspace	Overall access to facilities and improved physical aspects of the workspace were enhanced	The physical workspace is the most positive outcome — more space, easy access to work cars and equipment. Extra meeting rooms available.

groups, opportunity for collaboration and partnerships and improved workspace were mentioned. The physical collocation was ranked as the most important contributor to these outcomes (Box 7).

The physical collocation with other organisations in the CSB was ranked as the most important contributor to the positive outcomes of the collocation by 56% of survey respondents. For two organisations sharing a client base (Groups 1 and 3) participants mentioned communication

about clients and enhanced client outcomes as the most positive outcomes of the collocation. Participants were also asked to describe any drawbacks they, their clients or their organisation had experienced as a result of the collocation. All concerns referred to problems associated with physical aspects of the building and its location, particularly access and parking. Many staff moved from free on-site parking to a 10–15 minute walk for free parking, or close parking at a cost.

Qualitative comments elaborated on the results. In particular, the comments indicated a sense that the project was developmental in nature; that interactions were still mainly at the point of developing partnerships. Comments included, "Main interaction with other agencies seems to be happening at the top level (head of department) not at the clinical level as yet" (Group 1); and "The opportunity to build partnerships and collaborate has been a very positive outcome from collocating and I believe is still just in its infancy with great potential" (Group 3).

The study's main limitation lay in the movement of a number of the BSCHSI participants during the 11-month evaluation period, and the resultant small numbers in some of the group analysis sub-sections at T2 (Box 6). This reduced the statistical power of the study, particularly within the smaller groups. BSCHSI contracted an independent, off-site evaluation co-coordinator and had an Evaluation Committee, chaired by an independent academic. This ensured distance from the organisational environment, confidentiality and rigor.

Discussion

Internationally, health care is moving to closer integration of primary and secondary/tertiary care delivery in an attempt to survive the expected "tsunami" of increasingly prevalent chronic disease and population ageing. There is little in the literature detailing the impact of a collocation approach between health organisations on organisational function and outcome, and nothing which describes clearly the supporting strategies/methodology which accompany the physical setting. Our initiative is one of many occurring across the country attempting to describe a locally-applicable approach, identify the benefits and costs of such initiatives and share learnings.

The first year of the BSCHSI collocation has shown significant benefits. The collocation and activity objectives were met, and conjoint strategic integration initiatives progressed. An integrated multidisciplinary undergraduate teaching initiative involving seven different health disci-

plines was piloted, an integrated e-referral and OPD e-booking from the GP desktop was implemented, and a number of integrated care pathways were put into place.^{9,10} Despite the disruption of the move, the majority of respondents were positive about the benefits to organisations, individuals and clients.

The collocation evaluation demonstrated strong support from the organisational groups. The most powerful and recurring collocation benefit was enhanced knowledge of the activities of the collocating organisations. Taylor and Bernardi, Keisler and Cummings and Nardi and Whittaker have all demonstrated this as an important outcome of their diverse collocation initiatives.³⁻⁵ As our health system provides services for increasing numbers of older Australians and those with chronic diseases, such knowledge of available local patient support services is essential. In parallel, there was a statistically significant decrease in expectations regarding relationships between people in non-collocating organisations. While all organisations continued to partner with health service groups outside BSCHSI, this may suggest a powerful focus on shared resources involving the collocation partners. As a result of this finding, BSCHSI has broadened strategic planning and representation to include other local hospitals and another local Division of General Practice.

The physical collocation was ranked as the most important contributor to the positive outcomes. Most dissatisfaction involved the physical aspects of the collocation, in particular the cost and accessibility of parking. Participants from two organisations sharing a client base mentioned communication about clients and enhanced client outcomes as the most positive outcomes. Opportunities to identify service gaps and plan innovative ways of addressing these gaps using an integrated model were facilitated with physical collocation. For groups without shared clients and activities the collocation was valued less. As found in other studies it was our experience that the benefits of collocation were greatest for organisations sharing clinical initiatives or strategic health service objectives.¹¹⁻¹³

This project demonstrated the potential of organisational collocation to foster collaboration in health care delivery, successfully delivering some integrated activity between organisations with disparate funding and management structures. Critical to this was a clear, relevant and multi-faceted integration strategy that promoted regular contact in service planning and delivery, as physical collocation alone was unlikely to achieve the optimal integration outcome. Our work also suggested the impact of such a collocation is maximised if the groups share a common client base. Finally, the physical infrastructure must promote both formal and informal interaction.⁴ Shared physical space,^{4,5} in the form of common meeting, conference and lunch rooms and information transfer systems, was a key part of the intervention. The evaluation suggested that integrated service delivery among a variety of health organisations can be improved through physical collocation supported by an effective integration strategy.

Conclusion

The BSCHSI initiative combined a physical collocation, with validated integration strategies and common goals and vision in important clinical areas, to improve operations among five different work teams involving 90 different individuals. This initiative was found to assist in moving disparate perspectives towards a meeting of the minds. The evaluation demonstrated the significant early gains to integrated health service delivery that are possible using this approach, and further research in this area is a priority.

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Competing interests

The authors declare that they have no competing interests.

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