

Is integrated care associated with service costs and admission rates to institutional settings? An observational study of community mental health teams for older people in England

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Objectives: To evaluate the association between the degree of integration in community mental health teams (CMHTs) and: (i) the costs of service provision; (ii) rates of mental health inpatient and care home admission.

Methods: An observational study of service use and admissions to institutional care was undertaken for a prospectively-sampled cohort of patients from eight CMHTs in England. Teams were chosen to represent 'high' or 'low' levels of integrated working practice and patients were followed-up for seven months. General linear models were used to estimate service costs and the likelihood of institutional admission.

Results: Patients supported by high integration teams received services costing an estimated 44% more than comparable patients in low integration teams. However, after controlling for case mix, no significant differences were found in the likelihood of admission to mental health inpatient wards or care homes between team types.

Conclusions: Integrated mental health and social care teams appeared to facilitate greater access to community care services, but no consequent association was found with community tenure. Further research is required to identify the necessary and sufficient components of integrated community mental health care, and its effect on a wider range of outcomes using patient-reported measures. © 2016 The Authors. *International Journal of Geriatric Psychiatry* published by John Wiley & Sons, Ltd.

Key words: integrated care; costs; admissions; multidisciplinary teams; social work

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Introduction

An ageing population across developed countries, and the associated mental health difficulties prevalent in old age, are expected to place serious pressures on care systems. In meeting this challenge, community-based services have long been internationally regarded as the most appropriate first tier of specialist psychiatric support, with integrated mental health and other community/home support (or 'social care') seen as the gold standard (World Health Organisation [WHO] and World Psychiatric

Association [WPA], 1997; Wertheimer, 1997; WHO, 2012).

One widely advocated approach is the establishment of integrated teams containing a range of health and social care disciplines with access to community care as well as physical and mental health service resources (WHO and WPA, 1997; Royal College of Psychiatrists, 2006). Such teams are expected to yield a range of benefits over their non-integrated counterparts. Improved coordination between services, for example, may reduce inpatient and care home admissions through faster, more targeted provision of

home-based support (National Institute for Health and Clinical Excellence [NICE], 2007; WHO, 201), whilst joint working between different professional disciplines is expected to promote more holistic, person-centred practice and improved decision-making, benefiting care outcomes (Royal College of Psychiatrists, 2006). Patient experience may be further enhanced by increased information sharing and reduced duplication across organisational boundaries (Healthcare Commission, 2009).

To date, however, the evidence-base to support these assumptions is thin. Whilst research to support the general effectiveness of specialist community mental health services for older adults is promising, studies exploring the impact of different team components and processes, including those germane to integration, are absent (Draper, 2000; Draper and Low, 2004; Abendstern *et al.*, 2012). This may partly explain why integrated community service models have not been uniformly adopted. In England, for example, national studies of community mental health teams (CMHTs) for older people have identified marked heterogeneity in the degree of integrated working between specialist mental health support (delivered by NHS Trusts) and social care commissioned through social workers employed in separate local government organisations ('local authorities') (Audit Commission, 2002; Healthcare Commission, 2009; Tucker *et al.*, 2009; Wilberforce *et al.*, 2011). Hence, although the inclusion of social workers in CMHTs is regarded as a minimum standard for an integrated service (Lingard and Milne, 2004), one study found that this was achieved in only two-thirds of teams (Wilberforce *et al.*, 2013). Indeed, as a review by NICE concluded, community mental health service design, including standards for integrated care, would appear to rely on 'good practice, not good evidence' (NICE, 2007: 116). Against this background, a new study was designed to explore the relationship between CMHT integration, service receipt and patient outcomes.

Aims

The study aimed to evaluate the association between the degree of CMHT integration and:

- (1) the service costs of community mental health and social care provision; and
- (2) rates of admission to institutional settings (mental health inpatient wards and care homes).

It was anticipated that patients supported by more integrated CMHTs would incur higher costs through improved access to community-based health and social support, but would be less likely to be admitted to institutional care as a consequence.

Methods

An observational study explored the costs of service receipt and rates of admission to mental health inpatient beds and care homes for a prospectively sampled cross-section of CMHT service recipients. Analyses compared patients on the caseloads of CMHTs categorised as 'high' and 'low' integration teams, with data collected at two time points. Ethical permissions were obtained from an NRES Research Ethics Committee (Reference: 10/H0306/51). The presentation of methods is informed by STROBE guidelines (von Elm *et al.*, 2007).

Team selection

Teams were selected from respondents to a 2009 national postal survey of the structure and processes of CMHTs in England (Wilberforce *et al.*, 2011). The survey included information on nine indicators of service integration identified as features of good practice in a review of the policy, practice and research literature (Box 1), and had a response rate of 88%. Teams reporting fewer than four indicators of integration and containing only health practitioners were classified as 'low' integration teams (28% of the sample); teams reporting at least seven indicators of integration including the presence of both healthcare and social work practitioners were designated 'high' integration teams (27% of the sample).

Eight teams (four per team type [high/low], labelled A–H) participated in the observational study on the basis of power calculations required to identify 'moderate' effect sizes in admissions. Teams were chosen to reflect the geographic spread of services across England and covered a mix of rural/urban/mixed areas with varied economic profiles. All teams were specialist older adult services and provided support to people with both functional and organic disorders. Telephone interviews were undertaken with the managers of shortlisted teams to test the validity of the survey data and ensure teams' broader fidelity to the integration framework. In light of delays obtaining local permissions in Team H which prevented the collection of

follow-up data within the study timeframe, a replacement low integration team was recruited (Team I).

Box 1: Nine features of an integrated CMHT for older people

- A multidisciplinary core team including health and social care professionals
- Members directly line-managed within the team
- A single point of access for all or most referrals
- All professionals use the same structured assessment documentation
- All or most clients have a single care coordinator
- All or most clients have a single care plan containing the details of both health and social services
- At least one health professional within the team can authorise services funded by the local authority
- The team and local social services can access each other's patient records
- All core team members share the same office base

Participants and data collection

Anonymised data was sought for 120 patients from each CMHT (i.e. 960 individuals in total) at two time points: 'baseline' (T1) and 'follow-up' seven months later (T2). Patients were randomly selected from teams' caseload lists, subject to the criteria presented in Box 2.

T1 data was collected between October 2010 and January 2011 and encompassed information on patients' sociodemographic, functional and clinical characteristics, including diagnosis, need for help with daily activities of living, risk levels, behaviour and service receipt. The latter mostly related to the preceding month and included contact with CMHT practitioners, other mental health services (e.g. psychology and day hospitals) and six common social care services. All data were provided by patients' care co-ordinators, supported by clinical studies officers extracting material from case notes. T2 data comprised administrative information on admissions to psychiatric inpatient beds and permanent placements in nursing or residential homes between T1 and T2.

Box 2: Overview of participants and data collection

	Baseline (T1)	Follow-up (T2)
Target sample size	960	960
Participants	Random selection of home-dwelling patients, aged 65+, receiving regular support from CMHT	Same cohort
Data collection	Socio-demographic information Informal care receipt Diagnosis Date of referral to CMHT Functional dependency (Barthel Index) Instrumental ADL (Nottingham Extended ADL) Depression Screen (PHQ-2) Cognitive function (MMSE) Behavioural problems (six items) Risk (six items) CMHT contacts in last month Contacts with psychiatrist in last six months Other mental health service receipt Personal social care Day care Other social care services	Admission to psychiatric inpatient bed since T1 Admission to residential/nursing care since T1 Date of discharge or death, if applicable
Method of collection	Proforma completed by care coordinator	Administrative data collection

Notes: ADL: activities of daily living, PHQ: Patient Health Questionnaire, MMSE: mini-mental state examination.

Data preparation was undertaken using Stata (v12), and data imputation routines were used to fill missing information. In particular, single model-based routines were used to complete Barthel and behaviour index scores, whilst multiple imputation models were used for MMSE scores and cost data (Rubin, 1996). Full details of the imputation approach are published elsewhere (Challis *et al.*, 2014). Costs were estimated on the basis of the service receipt information collected at T1 using national unit costs (Curtis, 2011). Three general linear models were constructed to explore: (i) total service costs (with a gamma link function); (ii) the likelihood of admission to a mental health inpatient bed (logistic); and (iii) the probability of care home entry (complementary log-log). All regression models were iteratively constructed to control for

maximum variance in patient characteristics between team types, and included interaction terms where viable. Survival analysis was not possible because of missing date of event information for a significant proportion of cases.

Results

Baseline (T1) data

T1 data were returned for 877 patients. Table 1 outlines the whole-sample characteristics and reveals considerable between-team variation, particularly with respect to diagnosis, physical function, cognition, clinically relevant behaviour and risks. For example, although a third of the full sample had a functional mental illness, the corresponding proportion in Team F was almost three quarters. By contrast, over half of patients in Team I had organic disorders, and over a quarter in Team B had not received a diagnosis. Further, fewer than 2% of patients in Team G exhibited high levels of challenging behaviour compared to almost 13% in Team D.

Summary service cost data is presented in the upper section of Table 2. The average monthly cost of CMHT practitioner visits was £243 per patient. However, CMHT costs were substantially greater in Team D (£443) than in Team G (£125), a finding largely

driven by differences in the number of consultant psychiatrist contacts (mean of 2.7 vs 0.3 in the six months prior to T1). Similar variation was seen in the average monthly costs of social care support, which ranged from £575 to £920 between teams, whilst the proportion of patients in receipt of such care varied from around one-fifth to half. Other service costs ranged from just £15 per patient per month to £91. Average monthly costs for CMHT visits, social care input and other services were notably greater in high integration teams. Correspondingly, total average monthly costs were £762 across high integration teams and just £508 in low integration teams.

Follow-up (T2) data

T2 data were available for 867 individuals. Across the full sample, 5.8% of patients had been admitted to a mental health ward in the seven-month follow-up period, varying from 1.7% in Team I to 14.0% in Team D (see the lower section of Table 2). Further, 9.3% of the full sample had been placed in a care home, ranging from 5.1% in Team G to 21.9% in Team C. Admission rates to both hospital and care home settings were greater in high than in low integration teams. Thus, 7.9 and 12.5% of high integration team patients were admitted to inpatient and care home beds,

Table 1 Caseload characteristics

		Full sample %	Min – Max % across teams	Full sample <i>n</i>
Age	65–74	31.8	17.8–44.7	279
	75–84	44.6	37.5–53.2	391
	85+	23.6	15.8–39.3	207
Domicile	Own home (alone)	46.3	33.3–54.9	403
	Own home (with other)	45.5	35.4–53.5	396
	Other residence	8.27	3.5–20.4	72
Informal care	Yes	62.2	38.9–74.8	511
	No	37.8	25.2–61.1	310
Diagnosis	Organic	35.1	20.2–58.1	308
	Functional	46.9	15.4–72.1	411
	Mixed	6.8	1.1–9.4	60
	No diagnosis	11.2	0.0–26.4	98
Activities of daily living	Independent	74.8	59.6–91.3	644
	Minimal help needed	14.5	5.8–20.4	125
	Partially dependent	7.0	2.6–16.0	60
	Totally/very dependent	3.7	0.0–6.5	32
Cognitive function	Intact/mild impairment	66.4	17.3–82.7	563
	Moderate impairment	26.9	15.7–41.7	229
	Severe impairment	6.7	1.6–19.2	57
Challenging behaviour	Low	44.1	28.9–72.1	383
	Medium	50.1	26.0–67.5	435
	High	5.8	1.7–12.8	50
Risks	At least one high risk	18.1	8.7–23.9	156
	No high risks	81.9	76.1–91.3	705

Notes: 140 ADL scores and 438 MMSE scores were based on imputation procedures.

Table 2 Overview of costs and outcomes data

Team designation	High integration				Low integration				All
	A	B	C	D	E	F	G	I	
Costs (£) per patient per month (standard deviation)									
CMHT visits	318 (309)	220 (183)	307 (251)	443 (394)	237 (212)	205 (165)	125 (125)	138 (105)	243 (248)
Social care support (if in receipt)	575 (503)	920 (814)	724 (578)	790 (637)	888 (933)	723 (779)	639 (519)	709 (625)	746 (688)
<i>In receipt of social care support (%)</i>	43.0	48.6	49.1	40.9	36.0	30.8	21.5	48.7	39.6
Other costs	66 (135)	91 (114)	90 (157)	50 (94)	45 (91)	37 (119)	15 (54)	49 (134)	58 (122)
Total costs	691 (553)	842 (872)	729 (658)	830 (699)	616 (812)	523 (681)	284 (389)	512 (553)	638 (680)
Outcomes by T2 (%)									
Mental health inpatient admission	7.0	2.9	9.4	14.0	8.0	1.9	2.5	1.7	5.8
Care home placement	6.1	8.6	21.9	13.8	5.4	5.8	5.1	9.4	9.3
<i>n (max)</i>	114	105	107	94	112	104	119	117	870

Note: 'Other costs' include day hospital attendance, psychological therapy input, local authority social worker visits (outside CMHT) and external memory services.

respectively, compared with 3.6 and 6.4% in low integration teams.

Regression analyses

In the necessary absence of an experimental design, general linear models of costs and outcomes were used to explore differences between high and low integration teams after controlling for variation in case mix. Table 3 presents the results with relation to total service costs. As anticipated, greater costs were incurred in supporting patients with more physical, cognitive and behavioural difficulties. Furthermore, patients who lived alone incurred higher service costs than patients who lived with others, whilst patients who received at least eight hours informal care per week incurred lower services costs than people with less informal support. Notwithstanding the effects of these patient-specific variables, the services received by people supported by high integration teams cost an estimated 44% more than those provided to patients in low integration teams.

As seen in the second regression model (Table 4), the presence of challenging behaviour as a symptom of an organic, mixed or functional disorder other than depression was associated with an up to three-fold increase in the likelihood of hospital inpatient admission, although test statistics were outside conventional significance thresholds. However, an effect nearly as strong (and of borderline statistical significance) was observed for patients with a diagnosis of depression who *did not* exhibit challenging

Table 3 Generalised linear model (Gamma distribution, log-link function) of total service costs

	Coefficient (exp)	<i>t</i>	SE	<i>p</i>
Physical dependency (ref: independent)				
Limited help needed	1.98	6.0	0.22	<0.001
Major help needed	2.23	5.9	0.31	<0.001
Cognitive function (ref: intact)				
Mild impairment	1.06	0.6	0.12	0.579
Moderate impairment	1.35	2.1	0.19	0.036
Severe impairment	1.78	2.8	0.37	0.006
Challenging behaviour (ref: none/low)				
Medium	1.38	3.8	0.12	<0.001
High	1.80	3.1	0.34	0.002
Diagnostic groups (ref: all other groups)				
Depression/anxiety	0.88	-1.2	0.10	0.250
Other functional	0.83	-1.5	0.10	0.133
No formal diagnosis	0.65	-3.3	0.08	0.001
Mixed organic/functional	0.97	-0.2	0.15	0.851
Indication of depression				
Lives alone	1.18	2.2	0.09	0.029
8+ h/week informal care	1.43	4.6	0.11	<0.001
8+ h/week informal care	0.60	-4.3	0.07	<0.001
Team type (ref: low integration teams)				
High integration teams	1.44	4.8	0.11	<0.001
Constant	270.05	40.8	37.04	<0.001

Model fit: $F(15, 17\ 654.0) = 13.95$ ($p < 0.001$); Estimated $R^2 = 0.18$; $n = 803$.

Note: Model is based on 20 imputations (predictive mean matching) of all cost components and cognitive impairment (truncated regression of recent MMSE scores).

behaviour. Patients aged less than 85 or in receipt of eight or more hours' informal care per week were also significantly more likely to be admitted than others, as

Table 4 Logistic regression of the likelihood of inpatient admission

	Odds ratio	z	SE	p
Diagnostic groups (ref: all other groups)				
Depression and no challenging behaviour	2.64	2.0	1.30	0.049
Other functional and challenging behaviour	2.98	1.9	1.71	0.058
Organic and challenging behaviour	2.40	1.8	1.16	0.072
Mixed and challenging behaviour	2.96	1.7	1.90	0.092
Indication of depression	2.62	2.6	0.96	0.009
Aged 85+	0.29	-2.0	0.18	0.046
8+ h/week informal care	2.57	2.3	1.05	0.022
Time since referral (months)	0.98	-1.8	0.01	0.072
Number of visits by consultant	1.35	2.7	0.15	0.007
Team type (ref: low integration teams)				
High integration teams	1.99	1.8	0.75	0.068
Constant	0.01	-8.4	0.01	<0.001

Model fit: LR $\chi^2(10) = 51.78$ ($p < 0.001$); Pseudo $R^2 = 0.16$; Linktest $p(\text{hat}) = 0.021$; $p(\text{hatsq}) = 0.755$; Hosmer-Lemeshow $\chi^2(8) = 6.31$ ($p = 0.613$); $n = 800$.

were people who had received more consultant contacts in the six months prior to T1, and people less well known to the team. Over and above these considerations, the model suggested that patients in high integration teams were approximately twice as likely to

Table 5 Complementary log-log regression of care home entry

	Coefficient (exp)	t	SE	p
Functional dependence (ref: independent)				
Limited help needed	1.87	2.0	0.58	0.043
Major help needed	1.72	1.5	0.61	0.127
Cognitive function (ref: intact)				
Mild impairment	1.40	0.7	0.64	0.464
Moderate impairment	1.92	1.5	0.81	0.123
Severe impairment	3.39	2.5	1.68	0.014
Behavioural difficulties (ref: none/low)				
Medium	1.67	1.7	0.51	0.090
High	7.41	4.8	3.08	<0.001
Age (centred)	1.04	2.5	0.02	0.014
Lives alone	1.60	1.8	0.42	0.072
In receipt of informal care	0.49	-2.1	0.17	0.039
Team type (ref: low integration teams)				
High integration teams	1.49	1.6	0.37	0.108
Constant	<0.01	-13.4	<0.01	<0.001
log(time at risk)	1	(offset)		

Model fit: F(11, 40 927.1) = 7.15 ($p < 0.001$); $n = 812$.

Note: 'Time at risk' was until end of follow-up or patient's death (4%).

be admitted to hospital as patients in low integration teams, although this result failed to reach statistical significance.

The final regression model identified a predictable link between physical and cognitive impairment and care home admission (Table 5) with patients with severely impaired cognitive function over three times more likely to have entered a care home by T2 than those with intact cognition. A strong link was also found between acute behavioural problems and care home placement, whilst of the tested socio-demographic characteristics, older patients, people living alone and those without any informal care were more likely than others to enter long-term care. However, after controlling for these characteristics, no significant association was found between care home admission and team type.

Discussion

The need for closer coordination between specialist mental health and social care is regarded as axiomatic in the long-term care of older adults with mental health problems. Yet given the considerable national and international attention devoted to its achievement, and the organisational and financial obstacles to success, it is legitimate to demand a more rigorous evidence-base to inform this ambition than currently exists.

The observational study presented here found that older people with mental health problems and seen by high integration CMHTs received a broader range of community services than equivalent patients on the caseload of low integration teams, incurring 44% greater costs. This is consistent with the hypothesis that integrated teams are able to facilitate more intensive community support by virtue of improved working between specialist mental health and social care services, and by meeting additional support needs that would otherwise have gone unmet. Parallels can tentatively be drawn with research of intensive case management interventions, which seek to organise and co-ordinate mental health and social care services through a single care manager. For example, Challis and colleagues found that people with dementia in receipt of an intensive care management service received more care at home than a control group (Challis *et al.*, 2002), whilst a systematic review of case management and integration studies for frail older adults more generally also concluded that case management increased service use (Low *et al.*, 2011).

The prospect of incurring additional community resource costs may be interpreted as unwelcome news for local health and social care authorities, especially in countries experiencing an austere public finance regimen. Nevertheless, taken in the context of purported age discrimination in the funding of psychiatric services (Royal College of Psychiatrists, 2009), this support may be long overdue. For example, it has been estimated that older adults with mental health problems in the UK receive services worth £2bn less than working age adults with similar support needs (Beecham *et al.*, 2008). That said, health and social care planners and commissioners would demand that any additional community resources improve care outcomes, including the support of more people at home. Certainly, the search for evidence relating integrated care to outcomes is not a new endeavour. However, echoing early evaluations of multidisciplinary psychogeriatric services (O'Connor *et al.*, 1991), this study could not discern any positive link between the additional community support provided and reduced admission to institutional care. Indeed, any association appeared more likely to have been in the opposite direction.

This contrasts with the findings of a recent Cochrane Review which found that the provision of case management for people with dementia reduced admission to care homes within the first six months (Reilly *et al.*, 2015). However, longer-term outcomes were more equivocal, whilst another systematic review was unable to reach any definitive conclusion about integration and institutionalisation (Somme *et al.*, 2012). Of course, specific case management interventions were not in place in the present study, which examined variants of treatment-as-usual. Nevertheless, another systematic review relating to frail older people (not specific to mental health services) found no evidence to link integrated care to reduced hospital admissions (Low *et al.*, 2011), whilst the evidence base for integrated care and joint working more generally (i.e. not specific to older people) has been described as 'less than compelling' (Cameron *et al.*, 2014: p62).

The current research thus contributes to an evidence-base that suggests the association between integrated old age mental health care and patient outcomes—if it exists at all—is stubbornly elusive (Abendstern *et al.*, 2012). Nevertheless the principles of integrated care are supported by practitioners (Brown *et al.*, 2003; Freeman and Peck, 2006), and it is clear that older patients bear heavy personal costs when services are fragmented (Francis and Netten, 2004; Age Concern, 2011). Future research must thus

focus on the translational gap between this concept and patient outcomes (using patient-reported measures such as quality of life). Such work could, for example, seek to distinguish between the necessary and sufficient features of integration and how these are best implemented. One avenue of inquiry could explore how the unique skills of different professional disciplines within CMHTs are utilised. For example, it is notable that much research has explored the appropriate role of social workers in specialist mental health teams (e.g. McCrae *et al.*, 2004), yet the evidence-base seems focused on practitioner views or organisational implications, rather than on patient outcomes.

Methodological considerations

The strengths of this research include its use of detailed data on a sample of nearly 900 patients followed over seven months, enabling a relatively well-powered analysis of outcomes. However, as an observational study, the study was necessarily limited by how well it was able to control for confounding differences in CMHTs' casemix using regression analysis. Further, the research involved only four high and four low integration teams, and although these were carefully selected as demonstrating strong fidelity to their integration group, it is possible that other team-level effects unrelated to integration may have contributed to the observed differences. For example, the availability of inpatient and care home beds has long been linked to the likelihood of admissions (Greene and Ondrich, 1990; Cohen *et al.*, 1993). Furthermore, despite selecting teams to provide a balance in the local population characteristics (such as rurality and social deprivation), by including just eight teams this could only be crude. There may also have been systematic differences in the quality of capture of social care resource data in non-integrated teams. Where the social care staff were not linked to the CMHT, the capacity to derive good quality social care resource data was weaker. This could have exaggerated cost differences between integrated and non-integrated services.

The analysis was also predicated on a simple hypothesised causal link—i.e. that more services would lead to the reduced use of institutional care—yet other evidence suggests a more complex relationship between resources and outcomes. For example, it has been suggested that, in some instances, greater use of community services indicates that family caregivers have reached a crisis point in coping (Cohen *et al.*, 1993; Gaugler *et al.*, 2000). It is entirely plausible that fewer community services being available through

low integration teams may have been deleterious to carer welfare, but this study was unable to extend data collection to observe such outcomes. Furthermore, we should be wary of assuming that institutional care is necessarily 'bad'. For example, whilst older people have a general preference for community-based support over hospital admission, ward-based care remains an important component of specialist mental health support for people with complex needs, and restricted access can result in inadequate management of risk in patients' homes (Royal College of Psychiatrists, 2011), or result in excessive carer burden (Woods *et al.*, 2003).

Finally, it is important to reflect on how integration was operationalised in this study. Nine indicators were used to distinguish between high/low integration teams, centred around agency and team-level factors such as internal processes and the range of CMHT staff membership. Whilst these are widely advocated in policy and research literature (Wilberforce *et al.*, 2011), they may be criticised as being technocratic. Furthermore, the focus is on boundaries between mental health and social care, whilst in reality CMHTs must manage a multitude of frontiers. Of prime importance will be effective working with other health services, given the crucial interplay between physical and mental health (Blythe and White, 2012). This will include 'vertical' integration with general medical inpatient services ('above') and primary healthcare ('below'); each, in England, delivered by separate NHS organisations.

Conclusions

It is widely presumed that the integrated mental health and social care team is the optimal organisational model to deliver high quality, person-centred care. Yet systematic reviews have highlighted the paucity of available evidence to support its elevated status in national and international fora. This new research compared the costs of service use and admissions to institutional care between patients seen by 'high' and 'low' integration CMHTs. Using an observational study design, with regression analysis to control for confounding differences in case mix, patients supported by high integration teams received additional community services costing an estimated 44% more than patients in low integration teams. However, no significant differences in admissions to care homes or inpatient beds were identified. Further research is recommended to understand the necessary and

sufficient components of an integrated community mental health service.

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Key points

- The research compared service costs and admission rates for patients supported by CMHTs evidencing 'high' and 'low' levels of integration.
- Patients supported by high integration teams received more community services, costing an estimated 44% more than those delivered through low integration teams.
- There was no evidence that patients supported by high integration teams were less likely to be admitted to care homes or inpatient wards.
- The supposed link between service integration and beneficial patient outcomes is not sufficiently evidence-based, and remains a research priority.

Conflict of interest

None declared.

References

- Abendstern M, Harrington V, Brand C, *et al.* 2012. Variations in structures, processes and outcomes of community mental health teams for older people: a systematic review of the literature. *Aging Ment Health* 16(7): 861–873.
- Age Concern. 2011. Improving services and support for older people with mental health problems. In *Second Report from the UK Inquiry into Mental Health and Well-Being in Later Life*. Age Concern: London.
- Audit Commission. 2002. *Forget Me Not 2002: Developing Mental Health Services for Older People in England*. Audit Commission: London.
- Beecham J, Knapp M, Fernández J-L, *et al.* 2008. Age discrimination in mental health services. PSSRU Discussion Paper, 2536. Personal Social Services Research Unit: London.
- Blythe J, White J. 2012. Role of the mental health nurse towards physical health care in serious mental illness: an integrative review of 10 years of UK literature. *Int J Ment Health Nurs* 21: 193–201.

- Brown L, Tucker C, Domokos T. 2003. Evaluating the impact of integrated health and social care teams on older people living in the community. *Health Soc Care Community* 11(2): 85–94.
- Cameron A, Bostock L, Lart R. 2014. Service user and carer perspectives of joint and integrated working between health and social care. *J Integr Care* 22(2): 62–70.
- Challis D, von Abendorff R, Brown P, Chesterman J, Hughes J. 2002. Care management, dementia care and specialist mental health services: an evaluation. *Int J Geriatr Psychiatry* 17(4): 315–325.
- Challis D, Tucker S, Wilberforce M, *et al.* 2014. National trends and local delivery in old age mental health services: towards an evidence base. A mixed-methodology study of the balance of care approach, community mental health teams and specialist mental health outreach to care homes. *Programme Grants Appl Res* 2(4): 1–479.
- Cohen CA, Gold DP, Shulman KI, *et al.* 1993. Factors determining the decision to institutionalize dementing individuals: a prospective study. *Gerontologist* 33(6): 714–720.
- Curtis L. 2011. *Unit Costs of Health and Social Care 2011*. University of Kent: Canterbury.
- Draper B. 2000. The effectiveness of old age psychiatry services. *Int J Geriatr Psychiatry* 15(8): 687–703.
- Draper B, Low L. (2004). What is the effectiveness of old age mental health services WHO: Copenhagen Regional Office for Europe. [Accessed June 2015 from: www.euro.who.int/document/E83685.pdf]
- Francis J, Netten A. 2004. Raising the quality of home care: a study of service users' views. *Soc Policy Admin* 38(3): 290–305.
- Freeman T, Peck E. 2006. Evaluating partnerships: a case study of integrated specialist mental health services. *Health Soc Care Community* 14(5): 408–417.
- Gaugler JE, Edwards AB, Femia EE, *et al.* 2000. Predictors of institutionalization of cognitively impaired elders family help and the timing of placement. *J Gerontol B Psychol Sci Soc Sci* 55(4): 247–255.
- Greene VL, Ondrich JI. 1990. Risk factors for nursing home admissions and exits: a discrete-time hazard function approach. *J Gerontol* 45(6): S250–S258.
- Healthcare Commission. 2009. *Equality in Later Life: A National Study of Older People's Mental Health Services*. Healthcare Commission: London.
- Lingard J, Milne A. 2004. *Integrating Older People's Mental Health Services: Community Mental Health Teams for Older People*. Department of Health: London.
- Low LF, Yap M, Brodaty H. 2011. A systematic review of different models of home and community care services for older people. *BMC Health Serv Res* 11(93): 1–15.
- National Institute for Health and Clinical Excellence. 2007. *Dementia: The NICE/SCIE Guideline on Supporting People With Dementia and Their Carers in Health and Social Care*. British Psychological Society: London.
- McCrae N, Murray J, Huxley P, Evans S. 2004. Prospects for mental health social work: a qualitative study of attitudes of service managers and academic staff. *J Ment Health* 13(3): 305–317.
- O'Connor DW, Pollitt PA, Brook CP, Reiss BB, Roth M. 1991. Does early intervention reduce the number of elderly people with dementia admitted to institutions for long term care? *Br Med J* 302(6781): 871–875.
- Reilly S, Miranda-Castillo C, Malouf R, *et al.* 2015. Case management approaches to home support for people with dementia. *Cochrane Database Syst Rev* 1: 1–182.
- Royal College of Psychiatrists. 2006. Raising the standard: specialist services for older people with mental illness. In *Report of the Faculty of Old Age Psychiatry*. Royal College of Psychiatrists: London.
- Royal College of Psychiatrists. 2009. Age discrimination in mental health services: making equality a reality. Position Statement PS2/2009. [Accessed June 2015 from: www.rcpsych.ac.uk/pdf/PS02_2009x.pdf]
- Royal College of Psychiatrists. 2011. In-patient care for older people within mental health services. *Faculty Report FR/OA/1*. Royal College of Psychiatrists: London.
- Rubin DB. 1996. Multiple imputation after 18+ years (with discussion). *J Am Stat Assoc* 91(434): 473–489.
- Somme D, Trouve H, Dramé M, *et al.* 2012. Analysis of case management programs for patients with dementia: a systematic review. *Alzheimers Dement* 8(5): 426–436.
- Tucker S, Baldwin R, Hughes J, *et al.* 2009. Integrating mental health services for older people in England—from rhetoric to reality. *J Interprof Care* 23(4): 341–354.
- von Elm E, Altman D, Egger M, *et al.* 2007. The Strengthening of Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *Prev Med* 45(4): 247–251.
- Wertheimer J. 1997. Psychiatry of the elderly: a consensus statement. *Int J Geriatr Psychiatry* 12: 432–435.
- Wilberforce M, Harrington V, Brand C, *et al.* 2011. Towards integrated community mental health teams for older people in England: progress and new insights. *Int J Geriatr Psychiatry* 26: 221–228.
- Wilberforce M, Tucker S, Abendstern M, *et al.* 2013. Membership and management: structures of inter-professional working in community mental health teams for older people in England. *Int Psychogeriatr* 25(9): 1485–1492.
- Woods RT, Wills W, Higginson IJ, Hobbins J, Whitby M. 2003. Support in the community for people with dementia and their carers: a comparative outcome study of specialist mental health service interventions. *Int J Geriatr Psychiatry* 18(4): 298–307.
- World Health Organisation. 2012. *Dementia: A Public Health Priority*. WHO Press: Geneva.
- World Health Organization and World Psychiatric Association. 1997. *Organisation of Care in Psychiatry of the Elderly: A Technical Consensus Statement*. WHO Press: Geneva.