

# Reconfiguring in-patient services for adults with mental health problems: changing the balance of care

Sue Tucker, Jane Hughes, David Jolley, Deborah Buck, Claire Hargreaves and David Challis

## Background

Research suggests that a significant minority of hospital in-patients could be more appropriately supported in the community if enhanced services were available. However, little is known about these individuals or the services they require.

## Aims

To identify which individuals require what services, at what cost.

## Method

A 'balance of care' (BoC) study was undertaken in northern England. Drawing on routine electronic data about 315 admissions categorised into patient groups, frontline practitioners identified patients whose needs could be met in alternative settings and specified the services they required, using a modified nominal group approach. Costing employed a public-sector approach.

## Results

Community care was deemed appropriate for approximately a quarter of admissions including people with mild-moderate depression, an eating disorder or personality disorder, and some people with schizophrenia. Proposed community alternatives drew heavily on carer support services, community mental health teams and consultants, and there was widespread consensus on the need to increase out-of-hours community services. The costs of the proposed community care were relatively modest compared with hospital admission. On average social

care costs increased by approximately £60 per week, but total costs fell by £1626 per week.

## Conclusions

The findings raise strategic issues for both national policymakers and local service planners. Patients who could be managed at home can be characterised by diagnosis. Although potential financial savings were identified, the reported cost differences do not directly equate to cost savings. It is not clear whether in-patient beds could be reduced. However, existing beds could be more efficiently used.

## Declaration of interest

None.

## Keywords

Community mental health teams; in-patient services; resource allocation; service planning; balance of care.

## Copyright and usage

© The Royal College of Psychiatrists 2018. This is an Open Access article, distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives licence (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is unaltered and is properly cited. The written permission of Cambridge University Press must be obtained for commercial re-use or in order to create a derivative work.

Mental health services have been challenged to meet increasing demand and improve outcomes with decreased real-term funding.<sup>1,2</sup> Given that in-patient bed days are the most expensive units of mental health activity, reducing inappropriate admissions is key to improved productivity.<sup>2–4</sup> Hospital bed numbers have been reduced, and a recent survey found that less than a third of consultants had enough capacity to meet demand.<sup>2</sup> Nevertheless, around the country there is marked variation in in-patient bed use,<sup>2,5</sup> and the same survey suggested that if appropriate community services were available, almost a sixth of acute admissions could be prevented, echoing past research.<sup>2,6,7</sup> However, little is known about these individuals or the treatment and support that they require. Against this background, a balance of care (BoC) approach was used to explore whether the needs of certain in-patients could be met in alternative ways and, if so, which individuals require what services, at what cost.

team (CMHT) or in-patient services. This paper focuses on the latter population. In addition to CMHTs, core community services included home treatment and early intervention teams, as well as psychiatric liaison services based in general hospitals.

## The BoC approach

The BoC approach is a long-standing, strategic planning framework that identifies patients whose needs could be met in more than one setting (for example hospital or home) and explores the potential costs and consequences of the different care options in a simulation exercise grounded in the knowledge of experienced frontline practitioners.<sup>8–10</sup> As such, it provides service planners and commissioners with important information to underpin decisions about resource allocation. The six interlinked activities are described below.

### Stage 1: patient profiling

Anonymised data on in-patients' sociodemographic, clinical and service receipt characteristics were collected for a 7-week series of consecutive admissions to the Trust's acute mental health wards in 2013/14 (plus a 16-week series of consecutive referrals to CMHTs). Interward transfers and patients aged under 18 or over 64 were excluded. As the unit of analysis was the care episode, individuals could appear in the sample more than once.

## Method

### Setting

The research was undertaken in a large mental health trust in the north of England and formed part of a wider study of the best mix of services to provide for working age adults with mental health problems currently receiving community mental health

The data-collection proforma was based on a modified version of the Matching Resources to Care (MARC-2) instrument, which encompasses the main items characterising severe mental illness specified in the academic and policy literature.<sup>11,12</sup> The majority of data (over 40 items), including the Health of the Nation Outcome Scale (HoNOS)<sup>13</sup> and other items utilised within the Mental Health Clustering Tool,<sup>14</sup> were extracted from the Trust's electronic record system by National Health Service (NHS) information technology staff and, where data permitted (just one or two items were missing), multiple imputation was used to fill missing HoNOS values. All data items were those closest to the date of in-patient admission. Six additional variables critical to the profiling exercise and the reason for admission were collected by practitioners at point of hospital entry. Further information on the data collection exercise is available in Supplementary online file 1 available at <https://doi.org/10.1192/bjo.2018.60>.

#### Stage 2: case-type development

The sample was divided into 48 subgroups ('case types') using five variables deemed likely to be important in determining the locus, extent and cost of their care: affect/self-harm, other risks, psychotic symptoms, drug/alcohol misuse and relationship difficulties (see Supplementary online file 2). The selection of attributes followed a sequential process. First, a list of potential attributes was compiled from discussions with the study's Patient and Public Involvement Group and experienced Trust practitioners, plus a review of the wider BoC literature and mental health policy. Subsequently, an iterative approach was taken to prioritise these attributes in order to develop a typology whereby each of the most commonly populated groups captured at least 2.5% of the wider study sample (in-patient and CMHT patients), was broadly homogeneous on a number of other attributes, and was clinically meaningful. Together the most populated groups were required to capture at least two-thirds of the wider study sample.

#### Stage 3: formulation of vignettes

With the help of Trust personnel (a psychiatrist, ward manager, nurse, social worker and occupational therapist) a series of anonymous vignettes were drafted to represent the most prevalent case types in the wider study sample, ensuring their content validity. These were based on exemplar patients in the dataset and took the form of short case histories. Each vignette incorporated information about the five key variables employed in the case typology as well as the individual's mental health history, living situation, clinical state and service receipt. An example of a vignette is given in the Appendix.

#### Stage 4: generation of alternative care options

A range of staff from organisations involved in the provision of mental healthcare were invited to two locality-based care-planning workshops. These explored the most appropriate ways to meet the needs of the patients depicted in the vignettes.

Workshop participants were divided into small multidisciplinary groups, each of which was allocated a subset of seven vignettes. Following a modified nominal group approach,<sup>15</sup> participants were asked to indicate, first individually and then in their small groups, where they believed each depicted individual would be most appropriately supported – in hospital or the community. For those case types for whom community care was preferred (hereafter referred to as 'marginal' case types) they then specified the services required on care-planning sheets. These were based on local Trust documentation and differentiated between the input recommended in weeks 1 and 2 and weeks 3 to 8, respectively. To encourage participants to

think beyond current practice, groups were provided with details of services available elsewhere.

#### Stage 5: cost analyses

The estimated weekly costs of the proposed community care plans were compared with the costs of in-patient care using publicly available excel-based cost-modelling templates.<sup>16,17</sup> Costing employed a public-sector approach focusing on the most important (expensive or commonly incurred) costs borne by health and social care services. Wherever possible, the analysis drew on national unit costs and other publicly available sources.<sup>18,19</sup> If national costs were unavailable, local information was employed. All costs related to 2013.

The aggregate annual cost differences that might result from substituting the recommended community arrangements for in-patient admission were then estimated. Information about the likely number of admissions in each marginal case type was estimated from the patient profiling exercise (assuming current conditions prevailed), with the potential diversion period assumed to equate to the mean length of in-patient stay for each case type (excluding outliers). Confidence intervals were calculated to reflect uncertainty about the quantity and cost of resources used in the alternative planning scenarios. The possibility of cost-shifting between health and Social Services was examined and sensitivity analyses were undertaken to explore the impact of changing a number of structural aspects of the model, including the proportion of in-patients in each case type who might realistically be cared for in the community.

#### Stage 6: validation of results

A range of service commissioners, managers, providers and front-line practitioners were invited to a validation workshop. This had two parts. First, the researchers presented the findings from the patient profiling exercise, care-planning workshops and cost analyses. Second, participants commented on the validity of the findings; identified what they perceived to be the main issues they raised for the Trust; and highlighted their priorities for service improvement.

## Ethics

The study received ethical approval from the University of Manchester Research Ethics Committee (ref. 13076). It was also approved by the Trust, adopted by the Mental Health Research Network and supported by the Association of Directors of Adult Social Services. The patient profiling information provided by the Trust was fully anonymised and the research team had no patient contact. Written informed consent was obtained from participants at the care-planning and validation workshops.

## Results

### In-patient characteristics

Information was collected on 315 care episodes relating to 300 individuals; 287 people had one admission, 11 had two, and two had three. **Table 1** details their key sociodemographic, functional and clinical characteristics. Admissions of men outnumbered that for women by approximately three to two, and most individuals were White, over 30 years old and unemployed. Of those admissions for whom information was available (all HoNOS and related care cluster data were missing for almost 25% of the sample), nearly 60% were classified as having a psychotic disorder, and the majority had a complex mix of clinical and social problems.

**Table 1** In-patient admissions: sociodemographic, functional and clinical characteristics

Category	%	<i>n</i>
Gender		315
Women	42.9	
Men	57.1	
Age		315
18–30	29.8	
31–64	70.2	
Ethnicity		309
White	87.4	
Other	12.6	
Living situation		295
Alone	45.4	
With family	45.1	
With others	9.5	
Housing situation		292
Settled	74.0	
Unsettled	26.0	
Employment status		285
Employed/in education	12.9	
Unemployed/long-term sick/other	86.2	
Broad care cluster		240
Non-psychotic	40.0	
Psychotic	59.2	
Organic	0.8	
Clinically significant problems <sup>a</sup>		239
Overactive, aggressive, disruptive or agitated behaviour	38.9	
Non-accidental self-injury	42.3	
Problem-drinking or drug-taking	41.4	
Cognitive problems	18.4	
Physical illness or disability problems	25.1	
Problems associated with hallucinations and delusions	56.1	
Problems with depressed mood	56.9	
Other mental and behavioural problems	70.3	
Relationship difficulties <sup>a</sup>		239
Problems with relationships	52.7	

a. Health of the Nation Outcome Scale score of  $\geq 2$ .

### Timing and source of admissions

Most (80%) admissions occurred on weekdays. However, 58% of these were outside normal working hours (09.00–18.00 h). The most common sources of referral were accident and emergency (24%) and psychiatric liaison services based in general hospitals (19%).

### Reasons for admission

Information on the reason for admission was available for 290 admissions. As might be expected, most (90%) had experienced a substantial deterioration in their mental health/social functioning, while approaching three-quarters (72%) were considered at increased and substantial risk of harm to themselves or others. In total 30% were reported to be at increased and substantial risk of self-neglect, and a similar proportion was considered at significant risk of injury or abuse. Breakdown of support was said to have contributed to around a fifth (18%) of admissions, and 79% were deemed to require an immediate change of management.

### Prior service receipt

Most (85%) in-patients were known to the Trust before the current care episode. Although some individuals had been out of contact with Trust services for many years, more than three-quarters had been seen by community services in the past month (mean 4.4 service contacts excluding patients with no contact), and over a third had been admitted to a mental health bed in the previous year.

### Case-type distribution

Of the 48 case types used to characterise the sample, 44 were populated. These captured 75.6% of admissions (76 admissions lacked sufficient HoNOS data to include in the categorisation, and one lacked other necessary information.) As expected, some case types were more prevalent than others, and following the above criteria, 17 case types were selected for exploration in the BoC analysis (Table 2). Together these represented 63% of the admissions included in the categorisation.

### Alternative care options

A total of 58 staff participated in the care-planning exercise. Nurses were the most frequently represented discipline; others included consultant psychiatrists, occupational therapists, social workers, service managers and commissioners. More staff worked in community than in-patient settings (27 v. 20); 11 covered both.

Individual professionals made a total of 406 placement recommendations, and each case type (vignette) was considered by at least 22 participants. Multidisciplinary groups made a total of 40 recommendations and each case type was considered by at least eight groups.

Focusing on the multidisciplinary groups' recommendations, four case types (33, 35, 36 and 37) were overwhelmingly perceived to be most appropriately treated in hospital, and the majority of groups also recommended in-patient care for a further three (7, 39 and 40). In contrast, if enhanced community services were available, five case types were unanimously perceived to be more appropriately supported in the community (11, 12, 32, 47 and 48), and the vast majority of groups favoured community care for a further two (15 and 16). Views about the remaining three (3, 13 and 31) were more mixed, albeit most groups favoured community care (Table 3).

The seven case types for whom hospital care was seen as most appropriate typically represented people with schizophrenia who exhibited psychotic symptoms, posed a high risk to themselves or others, had limited understanding of their illness and were reluctant to adhere to treatment. Two represented people with marked drug/alcohol misuse problems, and five represented people who were socially isolated or had complex social problems. The majority of these patients were well-known to mental health services, and had had several (often involuntary) past admissions. Projections suggested the Trust had at least 550 admissions in these case types each year.

In contrast, the five case types for whom community support was unanimously recommended represented people with mild-moderate depression in combination with an eating or personality disorder, or individuals with schizophrenia that had deteriorated in the presence of a specific stressor. None had a history of substance misuse or current psychotic symptoms, and most had reasonably settled social circumstances. Analysis suggested there were approximately 270 such admissions in the Trust each year.

The five case types for whom the vast majority of groups recommended community care, or about whom views were mixed, typically included patients with more marked depression against a background of recent life stress, repeat self-harm, a suicide attempt and/or volatile relationships. Just one of these case types had active psychotic symptoms and another had alcohol misuse problems. Projections suggested there were over 300 such admissions in the Trust annually.

As logically any attempt to change the BoC would focus on those case types considered least appropriate for hospital, only those ten case types for whom the majority of groups favoured community care were included in the remaining analysis. These represented 32% of the in-patient admissions categorised in the case

**Table 2** Characteristics and size of the 17 case types depicted in the vignettes

Case type	Broad grouping of affect/risk of self-harm	Other high-level risk	Clinically significant delusions or hallucinations	Clinically significant misuse of drink or drugs	Relationship problems/lack of social support	Estimated annual prevalence of in-patients <sup>a</sup>
3	Marked depression/self-harm	Yes	Yes	No	Yes	75
7	Marked depression/self-harm	No	Yes	No	Yes	52
11	Marked depression/self-harm	Yes	No	No	Yes	60
12	Marked depression/self-harm	Yes	No	No	No	75
13	Marked depression/self-harm	No	No	Yes	Yes	67
15	Marked depression/self-harm	No	No	No	Yes	37
16	Marked depression/self-harm	No	No	No	No	82
31	Other depression/self-harm	No	No	No	Yes	45
32	Other depression/self-harm	No	No	No	No	45
33	Not depressed/at risk of self-harm	Yes	Yes	Yes	Yes	89
35	Not depressed/at risk of self-harm	Yes	Yes	No	Yes	60
36	Not depressed/at risk of self-harm	Yes	Yes	No	No	82
37	Not depressed/at risk of self-harm	No	Yes	Yes	Yes	82
39	Not depressed/at risk of self-harm	No	Yes	No	Yes	104
40	Not depressed/at risk of self-harm	No	Yes	No	No	82
47	Not depressed/at risk of self-harm	No	No	No	Yes	30
48	Not depressed/at risk of self-harm	No	No	No	No	60

a. Based on individuals it was possible to categorise.

**Table 3** Multidisciplinary groups' placement recommendations

Case type	Groups recommending in-patient care, % (groups, n)	Most appropriate setting
12	0.0 (9)	Community
11	0.0 (8)	Community
32	0.0 (8)	Community
47	0.0 (8)	Community
48	0.0 (8)	Community
16	11.1 (9)	Community
15	12.5 (8)	Community
31	25.0 (8)	Mixed views
3	37.5 (8)	Mixed views
13	37.5 (8)	Mixed views
7	55.6 (9)	Hospital
39	62.5 (8)	Hospital
40	62.5 (8)	Hospital
33	87.5 (8)	Hospital
35	87.5 (8)	Hospital
37	87.5 (8)	Hospital
36	88.9 (9)	Hospital

typology, and 24% of all admissions. Forty-two care plans were proposed for these case types, ranging from two for case type 47 to seven for case types 12 and 16 (with particular effort made to cover those case types representing higher numbers of in-patients). In the main, these plans drew on existing mental health services in weeks 1 and 2, supplemented by a wider range of health, social, employment, housing and welfare services in the medium to long-term. The six most common services/professional inputs in the short term were carer support services, CMHTs, consultant psychiatrists, general practitioners, intensive home treatment teams and mental health support workers, whereas additional services employed in weeks 3 to 8 included community groups, peer support, benefit and psychology services. Analysis suggested intensive home treatment teams and CMHTs would need to be able to deliver at least twice daily and twice weekly support, respectively.

### Cost comparisons

Considerable variation was found in the cost of the proposed community care packages, both within and between case types, dependent on the nature and extent of the services used (see supplementary

online file 3). Thus, although the costs of the three care plans for case type 13 were very similar (£550, £587 and £601 per week), the costs of the seven packages for case type 12 ranged from £333 to £2959 per week. That said, all but three of the 42 care packages were less expensive than hospital admission (estimated at £2456 per week), with a mean cost difference of £1626 per week. Furthermore, despite the use of multiple community staff and intensive input, most of this difference was attributable to the relatively low costs of providing specialist mental healthcare in the community rather than in hospital. In contrast, social care costs increased in most plans (mean cost increase £61 per week).

Table 4 details the potential aggregate annual cost differences that might result from diverting some or all of these admissions over the course of a year. The key variables in these calculations are the number of in-patient admissions represented by each case type projected over a 12-month period; the estimated costs of the proposed community care packages; and the length of in-patient stay. For example, if it proved possible to provide appropriate community care for all 60 admissions in case type 11, with each prevented admission releasing approximately £7200 compared with a 24-day hospital stay, this could in theory save local agencies almost £430 000 per year. However, although the estimated weekly cost of supporting an individual in case type 11 in the community is lower than that of a person in case type 12, because the latter represents a larger number of individuals with a longer hospital stay, the potential aggregate cost difference of diverting people in case type 12 is greater. Sensitivity analysis indicated that even if it only proved possible to divert 50% of admissions in case type 12 (the case type considered most appropriate for community care), the resulting cost difference might be as much as £600 000, whereas if it proved possible to provide appropriate community support for 50% of the people in all ten case types, the cost difference would approach £2 000 000.

### Validation and interpretation of results

Fifteen personnel attended the validation workshop, including consultant psychiatrists, senior mental health and local authority managers, CMHT, psychiatric liaison and ward staff. The discussion highlighted four issues. First, participants agreed that there were currently many inappropriate hospital admissions. Second, attendees were surprised by the proportion of hospital admissions outside of normal working hours, which they related to a lack of

**Table 4** Estimated savings from successful diversion from in-patient care (£s)

Case type	Estimated number of in-patient admissions per year	Estimated weekly cost of community care <sup>a</sup>	Mean length of in-patient stay <sup>b</sup> (days)	Estimated annual cost difference per admission diverted	Estimated annual cost difference if a third of admissions diverted	Estimated annual cost difference if a half of admissions diverted	Estimated annual cost difference if two-thirds of admissions diverted	Estimated annual cost difference if all admissions diverted <sup>c</sup>
12	75	556	62	16 822	417 947	626 921	835 894	1 253 843
11	60	354	24	7 204	143 189	214 783	286 377	429 566
32	45	304	24	7 377	109 972	164 957	219 943	329 915
47	30	520	16	4 424	43 962	65 943	87 925	131 887
48	60	269	29	9 059	180 050	270 076	360 100	540 152
16	82	1591	27	3 335	91 145	136 717	182 289	273 434
15	37	332	15	4 550	56 528	84 791	113 055	169 583
31	45	1316	13	2 116	31 548	47 321	63 095	94 643
3	75	1214	17	3 016	74 938	112 406	149 875	224 813
13	67	587	22	5 872	131 309	196 964	262 618	393 928

a. With the exception of case types 15 and 47, for which there were just two alternative care plans, these calculations are based on the median cost alternative care package. For case types 15 and 47 the higher cost proposal was used.  
b. Excluding outliers.  
c. Note the last column is not an exact multiple of the second and fourth because both numbers are rounded.

community services after 18.00 h and at weekends. Third, the costs of the proposed community care packages were perceived as modest and it was suggested that staff participating in the care-planning workshops had been unconsciously constrained by their experience of resource limitations. Fourth, there was widespread consensus on the need to increase out-of-hours community services and improve service access, including developing more flexible service boundaries between primary and secondary mental health services and health and social care.

## Discussion

### Main findings and comparison with findings from other studies

This study supports previous research that indicates that if the necessary community resources were available, a significant minority of in-patients could be more appropriately supported in less restrictive settings.<sup>2,6,7</sup> Moreover, it starts to identify the characteristics of those subgroups of in-patients for whom community care is considered more appropriate, and to enumerate the resources required in order to meet their needs, the costs of which appear relatively modest. This does not necessarily mean that the level of in-patient beds could be reduced, for there will always be a cohort of patients who require care in hospital with the intensive levels of assessment, monitoring and treatment this offers,<sup>2,20,21</sup> and the presented data say nothing about the number of community patients for whom hospital admission would be more appropriate (the extent of unmet demand). However, the findings do suggest that existing beds could be used more efficiently and highlight the need for any new mental health strategy to focus on the whole care system.

Whereas several past studies have highlighted a lack of inter-professional consensus as to who needs hospital admission,<sup>22–24</sup> this research found considerable agreement on those admissions for whom community care was deemed more appropriate. It is thus important to consider why, in reality, such patients are being admitted to hospital, incurring high human and financial costs. The first thing to say is that the findings do not automatically imply that actual placement decisions were incorrect, for, in reality practitioners' decisions are constrained by the availability of alternative resources.

At the validation workshop, it was noted that the high proportion of admissions outside of normal working hours was at least partly

related to the unavailability of community services at such times, and nationally it has been reported that only half of CMHTs offer a 24/7 service for people in crisis.<sup>25</sup> Recent policy guidance has committed to ensuring all crisis response and home treatment teams can provide a 24/7 alternative to acute in-patient admission by 2020/21.<sup>26</sup> However, there are questions about the funding for such new services, which it has been suggested will arise from the reinvestment of savings and efficiencies generated by improved mental healthcare.<sup>26</sup> Compared with the costs of in-patient care, the costs of the community care packages proposed in this study appeared relatively low, and, interestingly, patient representatives and carers who considered the needs of a subset of the vignettes in a mirror exercise (not reported here) typically endorsed still lower cost options than those employed here. Nevertheless, it is important to note that the identified cost differences do not directly equate to cost savings, for in order to release significant monies, the number of hospital admissions prevented would need to reach a critical mass facilitating the closure of beds/wards. Furthermore, at least in the short term any large-scale change would require additional investment (bridging funds), since any new provision must be in place before existing services close.

### Methodological considerations

Service planning for people with mental health problems is not easy.<sup>27</sup> This is a heterogeneous population with fluctuating needs, multiple organisations are engaged in service provision, and there is relatively little evidence about the comparative cost-effectiveness of institutional and non-institutional services. Moreover, outcomes are complex and difficult to measure, and processes to support strategic development are not well developed. Against this background, this research demonstrates the potential of the BoC approach to provide a transparent and systematic framework to support local decision-making and service redesign that starts not with the available services, but with patients' needs. Further, in bringing together stakeholders from different agencies, the approach promotes staff ownership and generates momentum for change since local staff members inform the study's scope, suggest alternatives and help identify solutions.<sup>28</sup>

That said, there are a number of reasons to treat the study's findings with caution. First, in seeking to maximise the use of routinely available data, the analysis was unable to categorise nearly a quarter of in-patient admissions because of the lack of information. Individuals with missing HoNOS data were less likely than other

patients to have had a previous hospital admission. However, there was no way of knowing whether they were more, less or equally appropriate for in-patient care than those for whom data were available. Second, the presented costs were all best or central estimates (although even the highest costs employed in the sensitivity analyses suggested that the proposed alternative community care would be considerably less expensive than hospital admission).

Third, in taking a public-sector costings approach, no account was taken of the costs of the (often substantial) assistance provided by informal carers. Fourth, ideally one would want to incorporate robust evidence about the effectiveness of care in different locations into the approach. However, to date no easy way has been found to do this,<sup>10</sup> and in light of this gap, the method assumes that in appraising alternative settings practitioners consider patients' best interests. Fifth, the use of vignettes cannot, of course, fully represent real-world decisions. Nevertheless, they provide a cost-effective way of investigating professional decision-making and enable existing conventions and constraints to be challenged.

Sixth, although the mix of services available in the study area and the sociodemographic and clinical characteristics of the patient population appeared largely typical of provision nationwide, it is not clear to what extent the study's findings can be generalised to other localities. However, the search for the most appropriate ways of supporting adults with mental health problems is certainly not just of local interest, while continuing financial pressures and increasing demand mean that the need to improve quality and efficiency is unlikely to go away any time soon.

Although originally developed as a national policy analysis tool in the 1970s,<sup>29</sup> the BoC approach has subsequently been used for a wide variety of patient groups in a number of different settings. However, two systematic literature reviews identified only one previous (somewhat specialised) study that had employed the approach in adult mental health services,<sup>30</sup> and highlighted a number of methodological problems with its use to date, including its typically heavy reliance on bespoke data collections.<sup>10,28</sup> Against this background, it is hoped that this paper serves to demonstrate the potential utility of the BoC approach to improve services for working age adults with mental health problems, and to use routinely collected electronic data for local service planning. As such, the presented analysis could now usefully be replicated in other areas.

**Sue Tucker**, MSc, RMN, RGN, Research Fellow, Personal Social Services Research Unit, University of Manchester, UK; **Jane Hughes**, MSc, PhD, Cert Dip SW, Senior Research Fellow, Personal Social Services Research Unit, University of Manchester, UK; **David Jolley**, MSc, MBBS Medicine, Honorary Reader, Personal Social Services Research Unit, University of Manchester, UK; **Deborah Buck**, PhD, Research Associate, Personal Social Services Research Unit, University of Manchester, UK; **Claire Hargreaves**, MRes, PhD, Research Associate, Personal Social Services Research Unit, University of Manchester, UK; **David Challis**, MSc, PhD, Cert PSW, Professor of Community Care Research and Director, Personal Social Services Research Unit, University of Manchester, UK

**Correspondence:** Sue Tucker, Personal Social Services Research Unit, University of Manchester, Room 2.16, Second Floor, Crawford House, Booth Street East, Manchester M13 9QS, UK. Email: [sue.tucker@manchester.ac.uk](mailto:sue.tucker@manchester.ac.uk)

First received 13 Apr 2018, final revision 18 Jul 2018, accepted 20 Sep 2018

## Acknowledgements

We thank the members of the Lay Reference Group (R Hanlon, M Mistry and J Smith) for their committed and insightful collaboration on this study.

## Funding

This article presents independent research funded by the National Institute for Health Research (NIHR) School for Social Care Research (SSCR). The views expressed in this article are those of the authors and not necessarily those of the NIHR SSCR or the Department of Health, NIHR or NHS.

## Supplementary material

Supplementary material is available online at <https://doi.org/10.1192/bjo.2018.60>.

## Appendix

### An example of a vignette: Carolyn (vignette 11)

Sociodemographic information

*Age, gender, employment status:* 38-year old unemployed woman.  
*Living situation:* Is currently living with her parents, having broken up with her partner. Accommodation reasonably acceptable.

Past mental health history

*Past service use:* Has had frequent contact with the specialist mental health services over the past 10 years, including a number of in-patient admissions with repeat self-harm (cutting and overdoses) and destruction of property. Was last discharged from hospital approximately 10 months ago. Adherence to medication is described as 'fair'; attendance at appointments 'good due to help'.  
*Diagnosis:* Depression/anxiety/borderline personality disorder. Has limited ability to protect herself, posing definite risks to her health, safety and well-being (significant – severe vulnerability).

Current presentation

*Mental health:*

- Irritable and agitated; verbally abusive;
- Frequent panic attacks with shortness of breath and palpitations;
- Marked depression; feelings of emptiness and hopelessness; disturbed sleep;
- Threatening to harm herself (overdose);
- No psychotic symptoms.

*Activities of daily living:* No marked self-neglect but looks slightly dishevelled. Has ongoing problems with budgeting/use of money/forms etc.

*Physical health:* No long-standing physical health problems.

*Use of alcohol/drugs:* No history of illicit drug or alcohol misuse.

*Social support:* Long-standing problems making and sustaining relationships, which tend to be stormy and intense. Has a complex and difficult relationship with her parents. No current safeguarding concerns.

*Reason for referral:* Low mood and threat of self-harm further to break-up of recent relationship.

## References

- Gilbert H. *Under Pressure*. King's Fund, 2015.
- Crisp N, Smith G, Nicholson K. *Old Problems, New Solutions – Improving Acute Psychiatric Care for Adults in England*. The Commission on Acute Adult Psychiatric Care, 2016.
- Naylor C, Bell A. *Mental Health and the Productivity Challenge. Improving Quality and Value for Money*. King's Fund, 2010.
- Department of Health. *No Health Without Mental Health: A Cross-Government Mental Health Outcomes Strategy for People of All Ages. Supporting Document – The Economic Case for Improving Efficiency and Quality in Mental Health*. Department of Health, 2011.
- Audit Commission. *Maximising Resources in Adult Mental Health*. Audit Commission, 2010.
- McDonagh MS, Smith DH, Goddard M. Measuring appropriate use of acute beds. A systematic review of methods and results. *Health Policy* 2000; **53**: 157–84.

- 7 National Audit Office. *Helping People Through Mental Health Crisis: The Role of Crisis Resolution and Home Treatment Services*. The Stationery Office, 2007.
- 8 Mooney GH. Planning for balance of care of the elderly. *Scott J Polit Econ* 1978; **25**: 149–64.
- 9 Challis D, Hughes J. Frail old people at the margins of care: some recent research findings. *Br J Psychiatry* 2002; **180**: 126–30.
- 10 Tucker S, Brand C, Wilberforce M, Challis D. The balance of care approach to health and social care planning: lessons from a systematic literature review. *Health Serv Manag Res* 2013; **26**: 18–28.
- 11 Huxley P, Reilly S, Gater R, Robinshaw E, Harrison J, Mohammed H, et al. Matching resources to care: the acceptability, validity and inter-rater reliability of a new instrument to assess severe mental illness (MARC-1). *Soc Psychiatry Psychiatr Epidemiol* 2000; **35**: 312–7.
- 12 Huxley P, Evans S, Munroe M, Cestari L. Mental health policy reforms and case complexity in CMHTs in England: replication study. *Psychiatr Bull* 2008; **32**: 49–52.
- 13 Wing JK, Curtis RH, Beevor AS. *HONOS: Health of the Nation Outcome Scales: Report on Research and Development July 1993-December 1995*. Royal College of Psychiatrists, 1996.
- 14 Department of Health Payment by Results team. *Mental Health Clustering Booklet (V2.03) (2012/13)*. Department of Health, 2012.
- 15 Bowling A. Consensus methods. In *Research Methods in Health. Investigating Health and Health Services* (ed A Bowling): 362–5. Open University Press, 1997.
- 16 Tucker S, Brand C, Wilberforce M, Challis D. *Optimising Health and Social Services for Older People. The Balance of Care Approach to Strategic Planning: A Handbook for Service Planners, Providers and Commissioners*. PSSRU University of Manchester, 2014.
- 17 Brand C, Tucker S, Wilberforce M, Challis D. *Balance of Care Workbook for Short-Stay Settings v1.1*. PSSRU University of Manchester, 2015 (<http://research.bmh.manchester.ac.uk/pssru/nihrsscr/productsandtoolkits/>).
- 18 Curtis L. *Unit Costs of Health and Social Care 2013*. PSSRU University of Kent, 2013.
- 19 Department of Health. *NHS Reference Costs 2012 to 2013*. Department of Health, 2013 (<https://www.gov.uk/government/publications/nhs-reference-costs-2012-to-2013>).
- 20 NHS Confederation Mental Health Network. *Defining Mental Health Services. Promoting Effective Commissioning and Supporting QIPP*. NHS Confederation, 2012.
- 21 Thornicroft G, Tansella M. The balanced care model: the case for both hospital- and community-based mental healthcare. *Br J Psychiatry* 2013; **202**: 246–8.
- 22 Gorrindo T, Goldfarb E, Chevalier L, Hoepfner BB, Birnbaum RJ, Meller B, et al. Inter professional differences in disposition decisions: results from a standardized web-based patient assessment. *Psychiatr Serv* 2013; **64**: 808–11.
- 23 Challis D, Tucker S, Wilberforce M, Brand C, Abendstern M, Stewart K, et al. 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* 2014; **2**: 1–480.
- 24 Phillips G, Gerdtz MF, Elsom SJ, Weiland TJ, Castle D. Mental health nurses' dispositional decision-making for people presenting to the emergency department with deliberate self-harm: an exploratory study. *Perspect Psychiatr Care* 2014; **51**: 148–53.
- 25 Care Quality Commission. *Right Here, Right Now – Help, Care and Support During a Mental Health Crisis*. Care Quality Commission, 2015.
- 26 NHS England. *Implementing the Five Year Forward View for Mental Health*. NHS England, 2016.
- 27 Mooney G. Priority setting in mental health services. *Appl Health Econ Health Policy* 2002; **1**: 65–74.
- 28 Tucker S, Hughes J, Brand C, Buck D, Challis D. The quality and implications of Balance of Care studies: lessons from a systematic literature review. *Health Serv Manag Res* 2015; **28**: 34–45.
- 29 McDonald AG, Cuddeford GC, Beale EML. Balance of care: some mathematical models of the National Health Service. *Br Med Bull* 1974; **30**: 262–71.
- 30 Knapp M, Chisholm D, Astin J, Lelliott P, Audini B. The cost consequences of changing the hospital-community balance: the mental health residential care study. *Psychol Med* 1997; **27**: 681–92.

EXTRA  
CONTENT  
ONLINEOPEN  
ACCESS