Continuity of care in mental health: understanding and measuring a complex phenomenon

T. Burns[1]*, J. Catty[2], S. White[2], S. Clement[3], G. Ellis[2], I. R. Jones[4], P. Lissouba[2], S. McLaren[3], D. Rose[5] and T. Wykes[5] for the ECHO Group†

[1] *Department of Psychiatry, University of Oxford, Warneford Hospital, Oxford, UK*

[2] *St George's, University of London, London, UK*

[3] *London South Bank University, London, UK*

[4] *University of Wales, Bangor, Wales, UK*

[5] *Institute of Psychiatry, London, UK*

Background. Continuity of care is considered by patients and clinicians an essential feature of good quality care in long-term disorders, yet there is general agreement that it is a complex concept. Most policies emphasize it and encourage systems to promote it. Despite this, there is no accepted definition or measure against which to test policies or interventions designed to improve continuity. We aimed to operationalize a multi-axial model of continuity of care and to use factor analysis to determine its validity for severe mental illness.

Method. A multi-axial model of continuity of care comprising eight facets was operationalized for quantitative data collection from mental health service users using 32 variables. Of these variables, 22 were subsequently entered into a factor analysis as independent components, using data from a clinical population considered to require long-term consistent care.

Results. Factor analysis produced seven independent continuity factors accounting for 62.5% of the total variance. These factors, *Experience and Relationship, Regularity, Meeting Needs, Consolidation, Managed Transitions, Care Coordination* and *Supported Living*, were close but not identical to the original theoretical model.

Conclusions. We confirmed that continuity of care is multi-factorial. Our seven factors are intuitively meaningful and appear to work in mental health. These factors should be used as a starting-point in research into the determinants and outcomes of continuity of care in long-term disorders.

Introduction

Continuity of care is considered a corner-stone in the effective management of long-term disorders by service users, clinicians and health-care policy-makers. It is fundamental in several policy documents (DoH, 1990, 1995, 2001) and has been proposed as a useful criterion for mental health service evaluation (Johnson *et al.* 1997). The weight given it is reflected in the widespread use of case management (Mueser *et al.* 1998) and national policies such as the Care Programme Approach (CPA) in the UK (DoH, 1990). Indeed, Tessler (1987) argues that it has replaced dependency and deinstitutionalization as the central issue in service provision.

However, although the importance of continuity of care has long been recognized, including for those with severe mental illness, it is generally agreed that there have been few attempts until recently to define it systematically, continuity being 'often lauded but seldom defined' (Freeman *et al.* 2000; see also Crawford *et al.* 2004). Definitions are frequently inadequate, often with only one or two elements included (Freeman *et al.* 2000). Freeman *et al.* (2000) identified 32 continuity of care studies in mental health and 14 in primary care but found more than 10 definitions and few attempts to explicate and analyse the idea substantively. Crawford *et al.* (2004) reviewed 435 relevant papers, most of which did not define continuity of care. Haggerty *et al.* (2003), however, emphasize that without clear definitions of continuity of care it is possible neither to investigate nor to solve discontinuities.

Adair *et al.* (2003), charting the definitions of continuity of care over 30 years, found that continuity

---

* Address for correspondence : Professor T. Burns, Department of Psychiatry, University of Oxford, Warneford Hospital, Oxford OX3 7JX, UK.

(Email : tom.burns@psych.ox.ac.uk)

† Members of the ECHO Group are listed in the Appendix.

was rarely distinguished from the interventions themselves until the 1980s, when the idea that it might be a multi-dimensional concept began to emerge (Bachrach, 1981), whereas in the 1990s continuity became seen as a potential measure of system-level reform. Where continuity had previously been seen as indicating care by the same caregiver or group of caregivers, the idea of continuity as involving the coordination of the patient's progress through the system gained hold.

Operationalizing the concept of continuity of care, however, has been notoriously difficult. Many of the earlier studies focused on discharge after an acute care episode rather than on longitudinal changes in continuity (Adair *et al.* 2003) and this has been the case even in some recent studies that have successfully distinguished between the continuity after discharge achieved by different mental health systems (Sytema *et al.* 1997; Sytema & Burgess, 1999). Sytema *et al.* (1997), however, also focused on flexibility of care, operationalized as the combinations of in-, day- and out-patient care used during follow-up, whereas other studies have focused on cross-boundary continuity between primary and secondary care (Bindman *et al.* 1997), psychiatric and emergency services (Heslop *et al.* 2000), or in-patient and community settings (Kopelowicz *et al.* 1998).

Several groups have proposed a range of conceptualizations that emphasize differing features: 'a sustained patient–physician partnership' (Nutting *et al.* 2003); maintenance of contact, consistency in the member of staff seen and success of transfer between services (Johnson *et al.* 1997); and 'adequate access to care … good interpersonal skills, good information flow and uptake between providers and organizations, and good care coordination' (Reid *et al.* 2002), whereas discontinuity has been defined as gaps in care (Cook *et al.* 2000). Others have again emphasized that continuity of care be understood as multidimensional. Crawford *et al.* (2004) propose five factors based on sustained contact with services, breaks in service delivery, the same member of staff being seen, coordination of health and social professionals and the experience of care; Johnson *et al.* (1997) include maintenance of contact, consistency in the member of staff seen, transition and integration between services, adherence to service plans, and management of service users' needs; and Ware *et al.* (2003) use five domains: knowledge, flexibility, availability, coordination and transitions. A systematic literature review by Joyce *et al.* (2004) found that continuity of care has been defined in terms of service delivery, accessibility, relationship base and individualized care.

The impact of continuity of care as a multi-dimensional concept on health and social outcomes has been less often studied, as studies have tended either to examine outcomes with implications for continuity (such as loss of contact) or to examine interventions assumed to promote continuity (Freeman *et al.* 2000). Adair *et al.* (2005), however, found that better overall continuity, as a combined rating of a range of dimensions, was associated with better quality of life, better community functioning, lower symptom severity and greater service satisfaction, as well as with lower hospital costs and higher community costs (Mitton *et al.* 2005), although the direction of these effects could not be determined.

Freeman *et al.* (2000) rated continuity of care studies from the service users' viewpoint according to relevance, method and concept and highlighted the necessity not only for clarity in the conceptualization of continuity of care in order to be able to gauge its impact but also for the inclusion of the service user's perspective. They summarized the principal characteristics of continuity of care in a 'multi-axial definition' comprising: *experienced*, *cross-boundary*, *flexible*, *information*, *relational* and *longitudinal*. In a subsequent study of continuity in mental health settings (Freeman *et al.* 2002), they added two further definitions, *contextual* and *long-term*. This extended model was the starting-point for the present study (see Table 1).

In the current study we aimed to test whether a multi-factorial model of continuity of care could be operationalized for users of mental health services and whether systematically collected service user-level data would confirm the model's validity for this group.

Method

Sample and procedure

People with long-term psychotic disorders were sampled from the caseloads of seven Community Mental Health Teams (CMHTs) covered by two mental health Trusts. The inclusion criteria were: clinical diagnosis of any psychotic disorder received at least 2 years previously; on the caseload of the CMHT for at least 6 months; and aged 18 to 65 years. Diagnosis was confirmed by use of OPCRIT (McGuffin *et al.* 1991).

The multi-axial model of continuity of care (Freeman *et al.* 2000, 2002) was taken as the starting-point. Each of its eight facets or definitions was operationalized by identifying data and/or measures that approximated to it. The variables used to operationalize each definition were agreed by expert consensus within the multi-disciplinary research group. They were chosen for their closeness to the definition being considered, the likelihood and regularity of

Table 1. *Multi-axial definition of continuity of care*

Generic (Freeman *et al.* 2000)
  Experienced (experience of a coordinated and smooth progression of care from the user's point of view)
  Flexible (to be flexible and adjust to the needs of the individual over time)
  Cross-boundary (effective communication between professionals and services and with service users)
  Information (excellent information transfer following the service user)
  Longitudinal (care from as few professionals as possible, consistent with other needs)
  Relational (to provide one or more named individual professionals with whom the user can establish and maintain a
    therapeutic relationship)
Mental health-specific (Freeman *et al.* 2002)
  Long-term (uninterrupted care for as long as the service user requires it)
  Contextual (care that should sustain a person's preferred social and personal relationship in the community and enhance
    quality of life)

---

their being recorded in the case-notes or the availability of established, validated instruments for obtaining them during a single interview.

Interviews collected basic data on: patterns of contact with services in the preceding 12 months; breaks in care; and referrals to other services including hospital admission. Demographic and illness data were also collected. Three questionnaire measures were also completed. The Camberwell Assessment of Need (CAN; Phelan *et al.* 1995) was used in the operationalization of *flexible continuity* and the Scale to Assess Therapeutic Relationships in Community Mental Health Care – service user version (STAR; McGuire-Snieckus *et al.* 2006) was used in the operationalization of *relational continuity*. CONTINU-UM (Continuity of care – User Measure; Rose *et al.* unpublished observations), a user-generated measure of continuity developed for the study, was used as a proxy for *experienced continuity*. Data on contact with services, number of professionals seen and information flow were also collected from CMHT records by study researchers using a standard schedule developed for the study. This recorded every face-to-face and telephone contact made between the team and the user; the discipline of the professional involved; for every transition in care (referral to an alternative or additional service, including admission to in-patient care), its date and whether appropriate documentation was recorded as having been sent or received; whether the annual CPA documentation was recorded as having been sent to the user, their carer and their general practitioner (GP); and contact between the CMHT and the GP.

Analysis

The continuity components were manipulated to give them comparable weight. Continuous variables were z scored if normally distributed or otherwise converted into categorical variables. Variables were coded so that a positive score indicated an assumed positive scenario. The direction of relationships as determined by the factor analysis, however, would indicate the final direction of the variables. Variables were omitted from further analysis if there was insufficient spread of response (<5% in any category) or if two variables had a Spearman rank correlation coefficient $\geqslant 0.8$, in which case one was omitted.

Bartlett's test of sphericity and the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy (Kaiser, 1974) were used to evaluate the strength of the linear association between the items in the inter-item correlation matrix. Variables were omitted if their individual measure of sampling adequacy was unacceptably low, until the overall KMO measure of sampling adequacy reached an acceptable level.

Exploratory factor analysis was carried out on variables retained after preliminary screening. A principal component analysis was used to extract factors with an eigenvalue greater than one. A varimax rotation was then used to produce interpretable independent factors. Extracted factors were interpreted by identifying the items that loaded onto each with a rotated factor loading >0.5. Analyses were conducted in SPSS version 14 for Windows (SPSS Inc., Chicago, IL, USA).

Results

Sample

Initially, 609 service users were identified as being potentially eligible for the study. Of these, 111 did not meet the inclusion criteria and 318 declined to participate, leaving 180 service users to be interviewed. Characteristics of the sample are given in Table 2. The diagnosis of psychosis was confirmed by OPCRIT (McGuffin *et al.* 1991) for 171.

Table 2. *Clinical and demographic characteristics*

	n	Trust 1	*n*	Trust 2	*n*	Total
Age, mean (S.D.), range	85	42.5 (10.71), 22–63	95	43.7 (11.09), 19–65	180	43.1 (10.90), 19–65
Gender, *n* (%)						
Female	85	36 (42.4)	95	44 (46.3)	180	80 (44.4)
Male		49 (57.6)		51 (53.7)		100 (55.6)
Ethnic group, *n* (%)						
White	85	47 (55.3)	95	73 (76.8)	180	120 (66.7)
Black		24 (28.2)		11 (11.6)		35 (19.4)
Other		14 (16.5)		11 (11.6)		25 (13.9)
Duration of illness (months), mean (S.D.), range	81	209.7 (134.08), 18–564	91	214.6 (141.5), 24–588	172	212.3 (137.69), 18–588
Number of lifetime hospital admissions, *n* (%)						
None	85	4 (4.7)	95	8 (8.4)	180	12 (6.7)
1–5		59 (69.4)		62 (65.3)		121 (67.2)
⩾6		22 (25.9)		25 (26.3)		47 (26.1)
Diagnosis (by OPCRIT)						
Schizophrenia	84	55 (65.5)	89	62 (69.7)	173	117 (67.6)
Bipolar disorder		9 (10.7)		10 (11.2)		17 (11.0)
Depression with psychotic features		1 (1.2)		1 (1.1)		2 (1.2)
Other psychotic disorder		18 (21.4)		15 (16.9)		33 (19.1)
Depression without psychotic features		1 (1.2)		1 (1.1)		2 (1.2)
Living situation, *n* (%)						
Living alone (± children under 18)	85	39 (45.9)	95	34 (35.8)	180	73 (40.6)
Living with others (± children under 18)		46 (54.1)		61 (64.2)		107 (59.4)
Accommodation type, *n* (%)						
Unsupervised accommodation	85	74 (87.1)	95	65 (68.4)	180	139 (77.2)
Supervised accommodation		11 (12.9)		30 (31.6)		41 (22.8)
Education, *n* (%)						
School up to age 16	85	26 (30.6)	95	43 (45.3)	180	69 (38.3)
School above age 16		59 (69.4)		52 (54.7)		111 (61.7)
Employment status, *n* (%)						
Paid employment[a]	54	9 (16.7)	83	9 (10.8)	137	18 (13.1)
Unemployed or unpaid work[b]		45 (83.3)		74 (89.2)		119 (86.9)

S.D., Standard deviation.

[a] Includes full-time, part-time and sheltered work and self-employment.

[b] Includes seeking work, unable to work, studying, retired or other.

Operationalizing continuity of care

Freeman's eight definitions of continuity were operationalized using a total of 32 components for consideration for entry into the factor analysis (Table 3).

Experienced continuity. Our overarching concept for the purposes of this study (and therefore not necessarily interpreted as either 'coordinated' or 'smooth'), this was to capture the service user perspective and operationalized using CONTINU-UM.

Flexible continuity. Conceptualized as the range of needs at any single time-point being met, this was operationalized using CAN and as response to change in clinical needs over time as increased rate of contacts in the 3 months prior to any hospital admission or service user-reported deterioration.

Cross-boundary continuity. Conceptualized as transitions and fragmentations, this was operationalized as referrals to other services, admissions to hospital, discharges from hospital, number of agencies involved and any user-reported contact with primary care.

Table 3. *Continuity of care components*

Type of continuity Component (*later omitted*)[a]	
Experienced continuity CONTINU-UM[b]	Non-medical input spread (number of different non-medical team members seen out of the total number of contacts with non-medical team members)
Flexible continuity (range of needs) *CAN total number of needs*[b,c] CAN number of met needs[b] *CAN number of unmet needs*[b] *CAN total level of needs*[b,c] *CAN total level of needs met by informal carers*[b,c] Proportion of needs met[b]	*Medical input spread (number of different medical team members seen out of the total number of contacts with medical team members)*
	Relational continuity STAR total score – any professional[b,d]
Flexible continuity (meeting changes in clinical needs) *Increased contacts in 3 months prior to user deterioration*[b] *Increased contacts in 3 months prior to hospital admission*	**Long-term continuity** Average gap between face-to-face contacts[c] Gaps of 2 months or more *Longest gap between contacts*[c] *Gaps of (average gap × 2 + 2 weeks)* *Number of user-rated breaks in care*[b,c]
Cross-boundary continuity Had a transition? *Referred to other agency* Contacts with primary care professionals[b] Number of agencies used in previous year[b]	*Total number of face-to-face contacts* *Total number of telephone calls* *Saw known CMHT member when hospitalized*[b] Any user-rated breaks in care?[b]
Information continuity Documented transition Proportion of letters sent by CMHT copied to user CPA copied to GP and user	**Contextual continuity** Attendance at day care[b] Supported accommodation[b]
Longitudinal continuity Designated care coordinators (CC)[b] Designated psychiatrists (Psych)[b]	

CONTINU-UM, Continuity of care – User Measure; STAR, Scale to Assess Therapeutic Relationships in Community Mental Health Care; CAN, Camberwell Assessment of Need; CPA, Care Programme Approach; GP, general practitioner; CMHT, Community Mental Health Team.

[a] Items in italics were subsequently dropped from the analysis, for reasons given in the text.

[b] Information from the service user.

[c] Variable reversed so that a high score indicates an assumed positive scenario; for example a high score for 'average gap between face-to-face contacts' would indicate short average gaps.

[d] For users with no identified care coordinator (STAR-c rating), the STAR concerning the relationship with the psychiatrist (STAR-p) was used; where no psychiatrist was identified or rated, the STAR concerning the relationship with a third identified professional (STAR-o) was used, to maximize data.

Continuity of information. Determined by the number of transitions collected for cross-boundary continuity, this was operationalized as (*a*) documents sent as a proportion of the identified transitions, (*b*) proportion of letters copied or sent directly to the user and (*c*) number of people to whom CPA documentation was copied (an established good-practice requirement for long-term care in this group).

Longitudinal continuity. This was operationalized as (*a*) any change in who acts as the user's care coordinator and the number of staff in that role, (*b*) any change in who acts as the user's psychiatrist and the number of psychiatrists in that role, (*c*) 'spread of non-medical CMHT input' (number of different non-medical team members seen out of the total number of contacts with

non-medical team members) and (*d*) 'spread of medical CMHT input' (number of different medical team members seen out of the total number of contacts with medical team members).

Relational or personal continuity. This was operationalized as the user-rated STAR.

Long-term continuity. Interpreted as breaks in care and user-initiated discontinuity, this was operationalized as: user-reported level of attendance of appointments with CMHT; number of user-initiated breaks from mental health care reported by user; user-reported medication adherence; total number of CMHT contacts in year; longest gap between contacts with secondary care team; number of gaps of more than two

months; number of more than average gaps (quantified as user's individual mean gap $\times 2 + 2$ weeks); number of days between hospital discharge and face-to-face contact with a member of the CMHT.

Contextual continuity. Interpreted as social context, this was operationalized as living situation (supported accommodation or independent) and daily activities (day care).

When the inter-item correlation matrix was constructed, 10 components were omitted from further analysis. 'Total number of phone calls' was omitted because of inconsistent case-note recording. The variables 'Saw known CMHT member when hospitalized', 'Increased contacts in three months prior to user deterioration', 'Increased contacts in three months prior to admission' and 'Number of user-rated breaks in care' were omitted because of insufficient spread of response. 'Total number of face-to-face contacts' was found to be correlated with 'Average gap between face-to-face contacts' ($r = 0.88$) and was therefore omitted from further analysis. 'Longest gap between face-to-face contacts' was highly correlated with 'Average gap between face-to-face contacts' ($r = 0.86$) and 'Gap of two months or more' ($r = 0.86$), so was omitted. 'Referred to other agency' was highly correlated with 'Had a transition' ($r = 0.81$) and so was omitted. 'Number of unmet needs' was highly correlated with 'Proportion of needs met' ($r = 0.94$) so it was omitted, and 'CAN total number of needs' was highly correlated with 'CAN total level of need' ($r = 0.93$) and was therefore omitted. Thus, 22 components were appropriate for entry into the exploratory factor analysis.

Factor analysis

A factor analysis was conducted to explore how the different components of continuity relate to each other. Entering the 22 components produced a KMO statistic of 0.49, just below the 0.5 threshold of an acceptable measure of sampling adequacy (Kaiser, 1974). The individual measures of sampling adequacy were then examined and two were found to be very low and so were removed from the factor analysis: 'Gaps of (average gap $\times 2 + 2$ weeks)' (0.28) and 'Medical input spread' (0.22). In the repeated factor analysis, Bartlett's test of sphericity indicated that the correlation matrix was not an identity matrix ($\chi^2 = 540.5$, $p < 0.001$). The KMO measure of sampling adequacy was 0.54, which, though still low, was acceptable. (The correlation matrix is not presented here but is available from the first author on request.) Seven factors were extracted with an eigenvalue of one or more, explaining 62.5% of the total variance in the data (Table 4). Where the factor was predominately characterized by a component or components used to operationalize the original multi-axial model, the name of that definition is added in parentheses in Table 4. Factor 5, *Managed Transitions*, was recoded into a straightforward trichotomous variable.

The majority of components loaded significantly onto one factor only, with rotated loadings of 0.5 and above. There were four exceptions to this. 'Any user-rated breaks in care?', 'CPA copied to GP and user?', 'Number of care coordinators in the past year' and 'Attended a day centre' all had absolute loadings between 0.4 and 0.5 onto only one factor and so were allocated to that respective factor.

Summary statistics for the 20 components of continuity of care in the seven-factor model are presented in Table 5.

Discussion

This study was based on the premise that continuity of care is 'often lauded but seldom defined' (Freeman *et al.* 2000). Anecdotal evidence would suggest that professionals tend to recognize the idea of continuity of care and intuitively accept it as a worthy goal, despite the paucity of evidence about what it means in practice.

We operationalized the original model to enable its systematic measurement and exploration using quantitative service user-level data. We used the global score of the new measure, CONTINU-UM, as a proxy for *experienced continuity* (as an overarching concept), treating it as a single measure that would reflect participants' own experiences and perspectives on the continuity of care they received. We operationalized the remaining elements using multiple components (collected both through interview and from clinical records) that, between them, would reflect the full range of concepts covered by the multi-axial model from which we started. By exploring the relationships between these components through a factor analysis, we found them to be grouped differently in practice, providing a new seven-factor model comprising *Experience and Relationship*, *Regularity*, *Meeting Needs*, *Consolidation*, *Managed Transitions*, *Care Coordination* and *Supported Living*. These have clear relationships with the different elements of the model of Freeman *et al.*, although they are not synonymous.

Our methodology was comparable to that of Adair *et al.* (2003), whose measure developed for the Canadian context includes both patient- and observer-rated scales. Our factors *Experience and Relationship* and *Meeting Needs* partially matched their patient-rated subscales 'relationship base' and 'responsive treatment' respectively, and their other subscale 'system fragmentation' seems to have been reflected

Table 4. *Continuity of care factors*

Factor	Items	Description (high score)	% of variance
1	CONTINU-UM STAR total score – any professional Proportion of needs met Any user-rated breaks in care? (negative[a])	*Experience and Relationship (experienced and relational continuity)* High experienced continuity, good therapeutic relationship, a greater proportion of needs met and not having a user-rated break in care	12.5
2	Average gap between face-to-face contacts Gaps of 2 months or more Non-medical input spread	*Regularity (long-term/longitudinal continuity)* Being seen more frequently by staff from fewer different non-medical disciplines	12.2
3	CAN total level of needs CAN number of met needs CPA copied to GP and user	*Meeting Needs (flexible continuity)* High level of need, high number of met needs and CPA copied to GP and user	9.5
4	Number of agencies used in previous year Contacts with primary care professionals	*Consolidation (cross-boundary continuity)* Having contact with fewer different agencies and not seeing primary care professionals	8.1
5	Had a transition? Documented transition	*Managed Transitions (cross-boundary continuity)* 1 = no transition, 0 = documented transition, −1 = undocumented transition	7.3
6	Designated care coordinators Designated psychiatrists (negative[a]) CAN total level of needs met by informal carers (reversed[a])	*Care Coordination (longitudinal continuity)* Having a designated care coordinator, having no psychiatrist or more than two and fewer needs met by informal carers	6.5
7	Supported accommodation Attendance at day centres or hospitals Proportion of letters sent by CMHT or copied to user	*Supported Living (contextual continuity)* Living in supported accommodation, attending day care and having more letters copied to the user	6.4
		Total	62.5

CONTINU-UM, Continuity of care – User Measure; STAR, Scale to Assess Therapeutic Relationships in Community Mental Health Care; CAN, Camberwell Assessment of Need; CPA, Care Programme Approach; GP, general practitioner; CMHT, Community Mental Health Team.

[a] 'Negative' indicates that the component loads negatively onto the factor, indicating an inverse relationship, whereas 'reversed' indicates that the variable was reverse-scored from the outset so that a high score would indicate a positive scenario.

in our analysis by three distinct factors, *Consolidation*, *Managed Transitions* and *Care Coordination*.

Our analysis thus confirms Freeman *et al*.'s argument and Adair *et al*.'s finding that continuity of care comprises more than one single entity. The overarching concept of continuity of care can be broken down into a number of independent concepts and the factors that emerged from our analysis seem intuitively meaningful and practical.

Methodological issues

The conclusions of this paper are inevitably derived from a sample who agreed to take part. How this group may have contrasted with the larger group who refused is unknown. It is possible, though not proven, that those who refused may have been less well engaged with or favourably disposed towards services. If this were the case, this would be likely to affect

the levels of several of the continuity factors of the sample (such as *Experience and Relationship* or *Regularity*), rather than affecting the overall factor structure.

We took an inclusive approach to operationalizing and measuring the original model. Consistent with this, we did not remove items from the exploratory factor analysis that were weakly correlated with each other (< 0.3 as is sometimes advised), as it was possible that different components of continuity would be unrelated to each other.

Given the nature of some of the components included, it was likely that some of them would not be related to each other, affecting the KMO statistic (measuring sampling adequacy). Overall measures of good fit may, therefore, not be applicable to our aims.

Data from records were limited by the availability of the information on file. This may have varied between CMHTs. In assessing 'information continuity' and its related components, whether the requisite

Table 5. *Levels of continuity components*

	n	Trust 1	*n*	Trust 2	*n*	Total
Factor 1: Experience and Relationship						
CONTINU-UM mean score (1–5)	78	3.5 (0.692)	89	3.4 (0.818)	167	3.5 (0.764) 1.5–4.8
STAR total score – any professional (0–48)	83	37.6 (8.68)	81	35.4 (9.26)	164	36.5 (9.01) 6–48
CAN proportion of needs met						
<65%	84	27 (32.1%)	94	32 (34.0%)	178	59 (33.1%)
65–91%		23 (27.4%)		26 (27.7%)		49 (27.5%)
>91%		34 (40.5%)		36 (38.3%)		70 (39.3%)
Any user-rated breaks in care						
Yes	85	3 (3.5%)	93	9 (9.7%)	178	12 (6.7%)
No		82 (96.5%)		84 (90.3%)		166 (93.3%)
Factor 2: Regularity						
Average gap between face-to-face contacts (days)	83	22.2 (12.46)	83	67.6 (44.47)	166	44.9 (39.71) 4–206
Gaps of 2 months or more						
Yes	84	27 (32.1%)	92	77 (83.7%)	176	104 (59.1%)
No		57 (67.9%)		15 (16.3%)		72 (40.9%)
Non-medical input spread						
⩾50%	82	5 (6.1%)	40	19 (47.5%)	122	24 (19.7%)
21–49%		6 (7.3%)		8 (20.0%)		14 (11.5%)
⩽20%		71 (86.6%)		13 (32.5%)		84 (68.9%)
Factor 3: Meeting Needs						
CAN total level of needs (0–66)	84	8.2 (4.56)	94	8.7 (5.15)	178	8.5 (4.87) 1–23
CAN number of met needs (0–22)	84	4.3 (2.11)	94	4.4 (2.51)	178	4.4 (2.33) 0–12
CPA copied to GP and user						
No	79	9 (11.4%)	68	26 (38.2%)	147	35 (23.8%)
To one		35 (41.2%)		26 (38.2%)		61 (41.5%)
To both		35 (44.3%)		15 (18.8%)		51 (34.7%)
Factor 4: Consolidation						
Number of agencies used in the previous year	72	5.2 (2.71)	79	4.9 (3.05)	151	5.1 (2.89) 1–16
Contact with primary care professionals						
Yes	72	52 (72.2%)	79	35 (44.3%)	151	87 (57.6)
No		20 (27.8%)		44 (55.7%)		64 (42.4)
Factor 5: Managed Transitions						
Had a transition?						
Yes	82	33 (40.2%)	92	21 (22.8%)	174	54 (31.0%)
No		49 (59.8%)		71 (77.2%)		120 (69.0%)
Documented transition?						
Yes	82	7 (8.5%)	92	10 (10.9%)	174	17 (9.8%)
No relevant transition		49 (59.8%)		71 (77.1%)		120 (69.0%)
Undocumented transition		26 (31.7%)		11 (12.0%)		37 (21.3%)
Factor 6: Care Coordination						
Number of designated care coordinators						
0 or 3+	85	9 (10.6%)	90	24 (26.7%)	175	33 (18.9%)
1 or 2		76 (89.4%)		66 (73.3%)		142 (81.1%)
Number of designated psychiatrists						
0 or 3+	85	18 (21.2%)	95	20 (21.1%)	180	38 (21.1%)
1 or 2		67 (78.8%)		75 (78.9%)		142 (78.9%)
CAN total level of needs met by informal carers (0–22)	84	3.6 (4.18)	94	3.2 (3.96)	178	3.4 (4.06) 0–21
Factor 7: Supported Living						
Supported accommodation						
Yes	72	4 (5.6%)	77	15 (19.5%)	149	19 (12.8%)
No		68 (94.4%)		62 (80.5%)		130 (87.2%)

Table 5 (*cont.*)

	n	Trust 1	*n*	Trust 2	*n*	Total
Attendance at day centres or hospitals						
Yes	72	18 (25.0%)	77	12 (15.6%)	149	30 (20.1%)
No		54 (75.0%)		65 (84.4%)		119 (79.9%)
Proportion of letters sent by CMHT or copied to user						
None	79	38 (48.1%)	80	50 (62.5%)	159	88 (55.3%)
⩽50%		10 (12.7%)		15 (18.8%)		25 (15.7%)
>50%		31 (39.2%)		15 (18.8%)		46 (28.9%)

CONTINU-UM, Continuity of care – User Measure; STAR, Scale to Assess Therapeutic Relationships in Community Mental Health Care; CAN, Camberwell Assessment of Need; CPA, Care Programme Approach; GP, general practitioner; CMHT, Community Mental Health Team.

Values are given as mean (standard deviation) or number (percentage).

information was on file was highly relevant. We therefore worked on the assumption that information not on file had not been sent, a conservative estimation of information flow. It is possible that the accuracy of service contact or transitions data may have been compromised by the quality of case-notes in a way that could not be quantified and that may have varied between CMHTs.

Although the factors are intuitively meaningful, their scoring is not and this complicates interpretation, which needs to be based on the components loading onto each factor.

Potential use of these factors

Our factor structure is helpful in challenging pre-conceptions about likely correlates of care practices. For instance, care components linked with *Care Coordination* and those linked with *Experience and Relationship* loaded onto separate factors, suggesting that focusing care on a single care coordinator is no guarantee in itself of better relational or experienced continuity. The loading of 'designated psychiatrist' onto *Care Coordination* suggested that this was common and reflected a choice in provision of care: users were more likely to see no psychiatrist or more than two (that is, to have no particular psychiatrist relating to them) if they saw only one or two care coordinators. This suggests that teams were choosing between emphasizing continuity achieved through the care coordinator or through the psychiatrist, without any evidence of this being based on an explicit policy. Any assumption that the one smoothly substitutes for the other is challenged by service users' reports in in-depth interviews conducted in a related study (Jones, personal communication), which found that they disliked having to see several psychiatrists, even if they had a single care coordinator.

Johnson *et al.* (1997) proposed that continuity be used as an important quality measure for services, but until recently there have been no metrics. Our operationalization of Freeman *et al.*'s original model draws on routinely collected data and well-known and validated measures. Our factors may in future be used to identify service user characteristics associated with different levels of continuity and therefore help to target extra support to vulnerable groups. They may also be used as outcomes against which to test measures (in particular service configurations) deployed to improve continuity. It is unlikely that a model comprising seven factors would be used in routine services. As it presently stands, however, it may provide for clinicians a means of conceptualizing continuity of care for mental health, along with a wide-ranging set of measures of continuity in its different facets, from which different aspects could be selected to reflect service priorities. The relative clinical importance of the seven factors remains to be tested against relevant clinical and social outcome measures. Further research should then identify the optimal continuity of care factors as the minimum necessary components of care for service users with chronic mental health problems.

Appendix: The ECHO Group

Main phase: Tom Burns (*University of Oxford*), Jocelyn Catty (*St George's, University of London*), Sarah Clement (*London South Bank University*), Kate Harvey (*University of Reading*), Sarah White (*St George's, University of London*), Tamara Anderson (*St George's, University of London*), Naomi Cowan (*St George's, University of London*), Gemma Ellis (*St George's, University of London*), Helen Eracleous (*St George's, University of London*), Connie Geyer (*St George's, University of London*), Pascale Lissouba (*St George's, University of*

London), Zoe Poole (*St George's, University of London*); *Qualitative strand*: Ian Rees Jones (*University of Wales, Bangor*), Nilufar Ahmed (*St George's, University of London*); *Developmental phase*: Diana Rose (*IOP, London*), Til Wykes (*IOP, London*), Angela Sweeney (*IOP, London*); *Organizational strand*: Susan McLaren (*London South Bank University*), Ruth Belling (*London South Bank University*), Jonathon Davies (*London South Bank University*), Ferew Lemma (*London South Bank University*), Margaret Whittock (*London South Bank University*).

Acknowledgements

Declaration of Interest

None.

References

Adair CE, McDougall GM, Beckie A, Joyce A, Mitton C, Wild CT, Gordon A, Costigan N (2003). History and measurement of continuity of care in mental health services and evidence of its role in outcomes. *Psychiatric Services* **54**, 1351–1356.

Adair CE, McDougall GM, Mitton CR, Joyce AS, Wild TC, Gordon A, Costigan N, Kowalsky L, Pasmeny G, Beckie A (2005). Continuity of care and health outcomes among persons with severe mental illness. *Psychiatric Services* **56**, 1061–1069.

Bachrach L (1981). Continuity of care for chronic mental users: a conceptual analysis. *American Journal of Psychiatry* **138**, 1449–1455.

Bindman J, Johnson S, Wright S, Szmukler G, Bebbington P, Kuipers E, Thornicroft G (1997). Integration between primary and secondary services in the care of the severely mentally ill: patients' and general practitioners' views. *British Journal of Psychiatry* **171**, 169–174.

Cook RI, Render M, Woods DD (2000). Gaps in the continuity of care and progress on patient safety. *British Medical Journal* **320**, 791–794.

Crawford M, Jonge E, Freeman G, Weaver T (2004). Providing continuity of care for people with severe mental illness. *Social Psychiatry and Psychiatric Epidemiology* **39**, 265–272.

DoH (1995). *Building Bridges: A Guide to Arrangements for Inter-agency Working for the Care and Protection of Severely Mentally Ill People*. Department of Health: London.

DoH (1990). *The Care Programme Approach for People with a Mental Illness Referred to the Special Psychiatric Services*. Joint Health/Social Services Circular HC (90) 23/LASS (90) 11. Department of Health: London.

DoH (2001). *Mental Health Policy Implementation Guide*. Department of Health: London.

Freeman G, Shepperd S, Robinson I, Ehrich K, Richards S (2000). *Continuity of Care: Report of a Scoping Exercise for the SDO Programme of NHS R&D*. National Co-ordinating Centre for Service Delivery and Organisation: London.

Freeman G, Weaver T, Low J, de Jonge E, Crawford M (2002). *Promoting Continuity of Care for People with Severe Mental Illness whose Needs Span Primary, Secondary and Social Care*. National Co-ordinating Centre for Service Delivery and Organisation: London.

Haggerty JL, Reid RJ, Freeman GK, Starfield BH, Adair CE, McKendry R (2003). Continuity of care: a multi-disciplinary review. *British Medical Journal* **327**, 1219–1221.

Heslop L, Elsom S, Parker N (2000). Improving continuity of care across psychiatric and emergency services: combining patient data within a participatory action research framework. *Journal of Advanced Nursing* **31**, 135–143.

Johnson S, Prosser D, Bindman J, Szmukler G (1997). Continuity of care for the severely mentally ill: concepts and measures. *Social Psychiatry and Psychiatric Epidemiology* **32**, 137–142.

Joyce A, Wild T, Adair C, McDougall G, Gordon A, Costigan N, Beckie A, Kowalsky L, Pasmeny G, Barnes F (2004). Continuity of care in mental health services: toward clarifying the construct. *Canadian Journal of Psychiatry* **49**, 539–550.

Kaiser HF (1974). Index of factorial simplicity. *Psychometrika* **39**, 31–36.

Kopelowicz A, Wallace C, Zarate R (1998). Teaching psychiatric inpatients to re-enter the community: a brief method of improving the continuity of care. *Psychiatric Services* **49**, 1313–1316.

McGuffin P, Farmer A, Harvey I (1991). A polydiagnostic application of operational criteria in studies of psychotic illness. Development and reliability of the OPCRIT system. *Archives of General Psychiatry* **48**, 764–770.

McGuire-Snieckus R, McCabe R, Catty J, Priebe S (2006). A new scale to assess the therapeutic relationship in community mental health care: STAR. *Psychological Medicine* **37**, 85–95.

Mitton CR, Adair CE, McDougall GM, Marcouz G (2005). Continuity of care and health care costs among persons with severe mental illness. *Psychiatric Services* **56**, 1070–1076.

Mueser KT, Bond GR, Drake RE, Resnick SG (1998). Models of community care for severe mental illness: a review of research on case management. *Schizophrenia Bulletin* **24**, 37–74.

Nutting PA, Goodwin MA, Flocke SA, Zyzanski SJ, Stange KC (2003). Continuity of primary care: to whom does it matter and when? *Annals of Family Medicine* **1**, 149–155.

Phelan M, Slade M, Thornicroft G, Dunn G, Holloway F, Wykes T, Strathdee G, Loftus L, McCrone P, Hayward P (1995). The Camberwell Assessment of Need: the validity and reliability of an instrument to assess the needs of people with severe mental illness. *British Journal of Psychiatry* **167**, 589–595.

Reid R, Haggerty J, McKendry R (2002). *Defusing the Confusion: Concepts and Measures of Continuity of Healthcare.*

Final Report. Canadian Health Services Research Foundation (CHSRF): Ottawa, Canada.

Sytema S, Burgess P (1999). Continuity of care and readmission in two service systems: a comparative Victorian and Groningen case-register study. *Acta Psychiatrica Scandinavica* **100**, 212–219.

Sytema S, Micciolo R, Tansella M (1997). Continuity of care for patients with schizophrenia and related disorders: a comparative South-Verona and Groningen case-register study. *Psychological Medicine* **27**, 1355–1362.

Tessler RC (1987). Continuity of care and client outcome. *Psychosocial Rehabilitation Journal* **11**, 39–53.

Ware NC, Dickey B, Tugenberg T, McHorney CA (2003). CONNECT: a measure of continuity of care in mental health services. *Mental Health Services Research* **5**, 209–221.