Assertive community treatment for psychiatric patients with frequent hospitalisation

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KEY MESSAGE

Compared with usual treatment, assertive community treatment further reduces the readmission rate and psychiatric bed occupancy and improves contact time with professionals and some clinical parameters.

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Introduction

Modern psychiatric practice has shifted from institutional to community care, and state mental hospitals and psychiatric wards in many industrialised countries have closed.[1] De-institutionalisation reduces the costs of health care provision and enables discharged patients more freedom in the community. Patients have improved psychotic symptoms and increased life satisfaction. Nonetheless, under-funding in the de-institutionalisation process has produced a surge in homelessness, unemployment, and criminal offences, particularly in people with severe mental illness and/or other co-morbidities. Hospital readmission and non-compliance with treatment are also increased. Intensive case management and assertive community treatment (ACT) approaches support de-institutionalised mental patients in the community.[2,3] Nonetheless, such community care approaches do not always achieve the goals of decreasing the rate and duration of hospital admissions, impacting on accommodation and employment status, improving mental state and social functioning, and reducing the cost of psychiatric care. The practice, composition, and organisation of case management teams often vary. It is important to identify the effective factors in such interventions.[4]

In 1999, psychiatric in-patient services were shifted to the community and rehabilitation services were strengthened. The Hospital Authority decreased 19% of inpatient bed days and increased specialist psychiatric outpatient attendances and home visits. Kwai Chung Hospital was downsized from 1572 beds in 2000 to 1000 beds in 2007. Frequently readmitted psychiatric patients are refractory and account for significantly higher health care costs; the ACT is more cost-effective.[5] In 2008, the Hospital Authority funded the Intervention for Frequent Readmitters (IFR) project and established two community support teams. The Kwai Chung Hospital IFR team adopted ACT to provide round-the-clock, trans-disciplinary support to about 120 frequently readmitted patients. This study assessed the effectiveness of ACT and measured service utilisation of patients for 2 years.

Methods

This study was conducted from May 2010 to January 2012. A total of 70 patients aged 18 to 65 years with ≥3 admissions within the preceding year from 1 April 2007 to 31 December 2008 were included. Patients aged <18 or >65 years with mental handicap or dementia, or with substance use disorder but without a major co-morbid psychiatric diagnosis were excluded. Two historical groups of 70 and 59 patients with repeated hospitalisations who received usual treatment from 1 August 2005 to 31 August 2006 and from 1 May 2009 to 30 September 2010 were control groups 1 and 2, respectively.

The ACT was delivered by a multidisciplinary team led by a consultant psychiatrist. The case manager was either a psychiatric nurse or occupational therapist. The patient-to-staff ratio was around 1:15. The case managers provided home visits, family work, community orientation, budgeting advice, individual counselling, violence assessment, crisis intervention, liaison work services to patients, and emotional/logistic support to the families. The team met daily to discuss any clinical problems and met with supervisory staff weekly to update clinical progress and plan long-term rehabilitation. Patients could contact their case managers anytime. An alert was attached to the electronic clinical record of patients to indicate accident and emergency

TABLE 1. Baseline characteristics of the Assertive Community Treatment (ACT) and usual treatment (control) groups*

Parameter	ACT (n=70)	Control 1 (n=70)	Control 2 (n=59)	X^2	P value
Gender				0.043	0.978
Male	39 (55.7)	38 (54.3)	33 (55.9)		
Female	31 (44.3)	32 (45.7)	26 (44.1)		
Priority follow-up				0.686	0.709
Yes	9 (12.9)	7 (10)	5 (8.5)		
No	61 (87.1)	63 (90)	54 (91.5)		
Principal diagnosis				0.239	0.888
Psychotic disorders	53 (75.7)	52 (74.3)	46 (78)		
Others	17 (24.3)	18 (25.7)	13 (22)		
Co-morbid diagnosis (substance abuse/ personality disorder)				3.035	0.219
Yes	13 (18.6)	12 (17.1)	17 (28.8)		
No	57 (81.4)	58 (82.9)	42 (71.2)		
				F	P value
Age of onset (years)	26.9±9.48	25.36±8.61	27.54±9.37	0.993	0.372
Age of recruitment (years)	40.34±11.74	38.96±11.55	41.90±11.62	1.023	0.362
No. of readmission	3.59±0.89	3.71±1.12	3.32±0.68	2.939	0.055
Length of hospital stay (days)	123.83±64.27	139.44±76.02	124.85±73.68	1.025	0.361
No. of accident and emergency department attendances	6.59±7.63	7.20±9.30	4.58±2.84	2.212	0.112
No. of loss to follow-ups	1.39±1.84	1.46±2.02	1.97±2.57	1.360	0.259
Cumulative days of loss to follow-up	28.21±43.06	43.90±73.37	50.46±64.28	2.284	0.105
No. of unplanned readmission	0.81±0.87	1.34±1.51	0.63±0.95	6.818	0.001

* Data are presented as No. (%) or mean±SD

TABLE 2. Repeated measure ANOVA of outcomes for the Assertive Community Treatment (ACT) and usual treatment (control) groups

Parameter	Baseline			6 months		
	ACT (n=70)	Control 1 (n=70)	Control 2 (n=59)	ACT (n=70)	Control 1 (n=70)	Control 2 (n=59)
No. of readmissions	1.79±0.45	1.86±0.56	1.66±0.34	0.27±0.56	0.64±0.89	0.31±0.56
Length of hospital stay (days)	61.91±32.14	69.72±38.01	62.42±36.84	14.93±30.52	48.67±58.46	48.25±59.86
No. of accident and emergency department attendances	3.29±3.82	3.60±4.65	2.29±1.42	1.84±3.90	2.49±4.75	1.58±2.53
No. of lost to follow-up	0.69±0.92	0.73±1.01	0.98±1.29	0.59±1.12	0.70±1.20	0.51±1.22
Cumulative days of lost to follow-up	14.11±21.53	21.95±36.68	25.7±32.01	11.76±29.39	34.77±56.29	23.31±47.55
No. of unplanned readmissions	0.41±0.44	0.67±0.76	0.31±0.41	0.04±0.20	0.21±0.48	0.051±0.29

* P<0.05
† P<0.01
‡ P<0.001

TABLE 3. Linear mixed model for clinical outcome after Assertive Community Treatment (ACT) or usual treatment (control 2)

Parameter	ACT			
	Baseline (n=70)	6 months (n=70)	12 months (n=69)	18 months (n=69)
Brief Psychiatric Rating Scale	5.66±4.84	3.71±3.28	2.94±2.83	2.72±2.91
Specific Level of Functioning Scale	185.79±12.40	188.81±11.99	192.07±11.07	191.87±11.56
Quality of life				
Physical	61.56±16.54	60.66±17.77	63.59±16.72	59.84±17.86
Psychological	54.33±22.89	56.02±19.68	58.89±18.52	56.13±20.29
Social relationships	56.07±16.36	58.41±16.91	57.75±20.75	56.89±17.01
Environment	59.39±17.91	60.25±16.01	60.80±16.47	58.48±17.51

* P<0.05
† P<0.01
‡ P<0.001

department staff the need to liaise with the case manager with regard to any psychiatric problems. The resident psychiatrists provided continuous care to patients. The ACT lasted for 36 months during which all patients were actively engaged and retained in the service.

The service utilisation of patients was retrieved from the Clinical Data Analysis and Reporting System. These included the number of readmissions, length of stay in psychiatric hospital, number of attendances to an accident and emergency department, number of unplanned readmissions, frequency and duration of defaulting, pattern of drug use, and number of home visits by health professionals. Clinical outcomes were measured using the Brief Psychiatric Rating Scale, Specific Level of Functioning Scale, and World Health Organization Quality of Life Brief Questionnaire-HK.

Results

Respectively in the ACT and two usual treatment groups, 39, 38, and 33 of patients were men; the mean ages at illness onset were 26.90, 25.36, and 27.54; and the mean ages at recruitment were 40.34, 38.96, and 41.90. The principal diagnosis was schizophrenia/psychotic disorder in 53, 52, and 46 patients; a co-morbid diagnosis was present in 13, 12, and 17 patients; and 9, 7, and 5 patients had a history of violence and received priority follow-up. The three groups did not differ significantly in baseline parameters (Table 1).

Repeated measures ANOVA for the service utilisation parameters (Table 2) and linear mixed model analysis for clinical outcome parameters (Table 3) were used. Over time, all three groups had fewer readmissions, shorter length of hospital stay, fewer accident and emergency department attendances, fewer numbers and days lost to follow-up, and fewer unplanned readmissions; ACT generally achieved better outcome than usual treatment.

Patients recruited in later period used significantly more new drugs than patients recruited earlier. More home visits were made to patients in usual treatment group 2 at baseline, but those in the ACT group received significantly more home visits than either control group during the three follow-up periods. The ACT group scored significantly higher in the Brief Psychiatric Rating Scale and the Specific Level of Functioning Scale over time, but not for quality of life.

12 months			18 months			Time			Group			Time x group	
ACT (n=69)	Control 1 (n=70)	Control 2 (n=57)	ACT (n=69)	Control 1 (n=69)	Control 2 (n=56)	F	Partial η2	Post-hoc	F	Partial η2	Post-hoc	F	Partial η2
0.16±0.40	0.44±0.90	0.41±0.61	0.11±0.30	0.38±0.72	0.48 ±0.91	290.63‡	0.597	0>6,12,18	7.396‡	0.070	ACT<control 1	3.298‡	0.033
12.80±34.74	30.89±55.52	23.64±44.14	6.44±18.19	25.64±46.71	29.23±52.00	66.492‡	0.253	0>6>12,18	7.983‡	0.075	ACT<control 1 and 2	3.074‡	0.030
1.49±3.95	2.31±4.04	1.18±1.89	1.65±3.18	1.15±2.56	1.34 ±2.23	28.897‡	0.128	0>6>12,18	1.088†	0.011	-	2.773*	0.028
0.44±0.84	0.51±1.07	0.39±0.87	0.38±1.04	0.45±0.94	0.65 ±0.99	7.143‡	0.035	0>12,18	0.357	0.004	-	1.382	0.014
0.63±1.82	30.70±58.64	9.73±21.43	0.58±2.00	26.68±53.63	17.12±34.23	5.660†	0.028	6>12,18	9.452‡	0.088	ACT<control 1 and 2	3.168†	0.031
0.00±0.01	0.09±0.33	0.05±0.22	0.00±0.01	0.10±0.35	0.12 ±0.49	53.493‡	0.214	0>6,12,18	9.961‡	0.092	ACT and control 2<control 1	3.248†	0.032

Control 2				Time (F)	Group (F)	Time x group (F)
Baseline (n=59)	6 months (n=59)	12 months (n=57)	18 months (n=56)			
6.78±4.19	5.17±3.10	5.56±3.95	7.90±4.33	14.051‡	20.765‡	10.133‡
181.62±12.55	183.17±16.56	184.81±11.92	179.50±12.74	4.467†	14.751‡	5.438†
58.68±16.89	58.83±16.58	60.73±13.94	57.27±17.28	2.734*	0.448	0.356
55.10±20.82	56.73±20.850	57.04±17.17	58.33±20.18	3.067*	0.306	0.309
46.86±19.63	45.21±21.38	47.88±19.07	44.33±18.00	0.488	13.101‡	0.222
53.56±15.66	57.35±15.64	61.46±16.47	57.67±16.92	3.680*	0.516	2.318

Discussion

The ACT is a relatively high intensity intervention, similar to the Dartmouth ACT Fidelity Scale. It significantly reduced readmission, bed occupancy, and duration of lost to follow-up, and increased patient adherence to medical treatment, as case managers were alert to patients lost to follow-up and keen to trace them back for treatment. As our patients were generally psychosocially underprivileged rather than mentally unstable, it is difficult to explain the clinical significance of gaining a few scores in outcome.

Most of the service utilisation parameters improved over time; this was in line with the de-institutionalisation process. Many novice naturalistic treatments were introduced during the interim period: use of new antipsychotics and new community rehabilitation approaches such as a recovery support outreach team, personalised care programme, and other case management programmes.

The success of the ACT may be associated with a high staff-to-patient ratio, all-time availability of case managers, the intensive treatment protocols, and a team of highly motivated, experienced, and competent staff. In addition, the alert label in the electronic clinical record encouraged communication between accident and emergency department staff and case managers. Furthermore, all patients were cared for by the same resident psychiatrists throughout the intervention period.

Limitations

All patients were recruited from a single region and may not be representative of Hong Kong. The assessment on clinical scales was performed by a clinician who was not blinded to the treatment group. The reliability and validity of the clinical outcomes could have been improved using a double-blind methodology. The service pledge to reduce the readmission rate and length of hospital stay may have inadvertently encouraged case managers to achieve the desired results. Randomised control trials are needed to confirm the results.

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