

Effectiveness of Assertive Community Treatment in Hong Kong Among Patients With Frequent Hospital Admissions

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Objective: This study examined the effectiveness of assertive community treatment (ACT) for a group of psychiatric patients in Hong Kong with frequent hospital admissions. **Methods:** The study compared hospitalization and other outcomes among participants of a two-year ACT intervention and a control group who had received treatment as usual two years earlier. The patients were Chinese adult psychiatric patients who had three or more admissions in the 12 months before the study. **Results:** Seventy patients were recruited for each group. Although all the outcome measures decreased with time for both groups, repeated-measures analysis of variance indicated that the treatment group had significantly greater reductions in readmission rate, length of stay, and total days between a missed medical appointment and the next service contact. **Conclusions:** ACT was effective in reducing hospitalization and enhancing service contacts for a group of Chinese psychiatric patients with frequent hospital admissions. (*Psychiatric Services* 64:1170–1172, 2013; doi: 10.1176/appi.ps.201200421)

An essential feature of modern psychiatric services is the shift from institutional to community care.

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Among various models of community care, intensive case management and assertive community treatment (ACT) are considered particularly effective in maintaining patients' therapeutic contact with psychiatric services and are appreciated by patients for their positive effects on quality of life (1–4). However, the practice, composition, and organization of case management teams often vary (4,5), and there is usually a lack of documentation for program implementation (6). It is important to identify the effective ingredients of such intervention (7–9) and to research different models of community care for various patient groups in different countries.

Hong Kong is a city of over seven million, 95% of whom are ethnic Chinese. Kwai Chung Hospital is a public psychiatric hospital serving 1.6 million residents, the largest population cluster served by any of the city's psychiatric hospitals. In recent years, it has been downsized, with bed numbers dropping from about 1,600 in 2000 to 1,000 in 2007. A randomized controlled trial demonstrated that a case management model of care has been an effective way to discharge and maintain long-stay psychiatric patients in the community, with no undue readmission or deterioration in mental state (10). However, there is always a group of patients whose symptoms are difficult to treat and who are frequently readmitted. In the United Kingdom, the ACT approach has been shown to be effective in caring for such patients (11,12).

In 2008, the Hospital Authority in Hong Kong launched a project called

Intervention for Frequent Readmitters. Two pilot community psychiatric mobile treatment teams were set up, one at Kwai Chung Hospital. Each multidisciplinary team was led by a consultant psychiatrist and adopted an ACT model. There were seven full-time case managers who were either a psychiatric nurse or an occupational therapist by training. The staff-to-patient ratio was around 1:15. On top of providing usual clinical care, the case managers also provided home visits, family therapy, community orientation and budgeting advice, individual counseling, violence assessment, crisis intervention, and liaison work including advice and consultation to the patients, their families, and the staff of the emergency department in general hospitals. Other part-time team members included a clinical psychologist, a medical social worker, two resident psychiatrists, and another supervising consultant psychiatrist.

Because of the staff mix, the team could directly provide patients with most necessary services in the community in a well-coordinated and seamless manner. The case managers of the team met daily for any clinical problems that arose, and the whole team met with supervisory staff weekly to update them on the patients' clinical progress and make plans for long-term rehabilitation. Each case manager was issued a mobile telephone, and patients could contact their respective case manager 24 hours a day, seven days a week. Furthermore, a red alert was attached to each patient's electronic clinical record, which alerted the emergency department staff to

liaise with the case manager if the patient sought treatment for psychiatric problems. The teams' resident psychiatrists provided direct medical care to all the patients, in both the hospital and the outpatient setting, so the team could be actively involved in most admissions as well as in management planning before all discharges. The intervention lasted for 24 months.

This study measured service utilization for two years among patients of the Intervention for Frequent Readmitters team at Kwai Chung Hospital.

Methods

All patients aged 18 to 65 years old with three or more admissions to Kwai Chung Hospital between April 1, 2007, and December 31, 2008, were recruited into the treatment group. A similar group of patients were recruited by using the same criteria except the admissions occurred between August 1, 2005, and August 31, 2006. This historical control group was carefully chosen to avoid any overlap of its 24-month follow-up period with the treatment period of the treatment group. The exclusion criteria were age younger than 18 or older than 65, a learning disability or dementia, or a diagnosis of substance use disorder without a comorbid diagnosis of a major psychiatric disorder.

After complete description of the study to the recruited patients, written informed consent was obtained.

The treatment group received care consistent with an ACT model from the Intervention for Frequent Readmitters team. The control group received treatment as usual, which could include various other community psychiatric services, such as regular visits by a traditional community psychiatric nurse, ordinary case management, support by a social worker on the basis of need, or just follow-up by a case doctor at an outpatient clinic.

The outcome measures, including readmissions to any psychiatric hospital, length of stay (days) at a psychiatric hospital, visits to any emergency department, and cumulative days between a missed medical appointment and the next contact with services (defaulting days), were collected at

Table 1

Repeated-measures ANOVA comparing outcomes between patients who received ACT (treatment group) or usual care (control group)^a

Outcome	Time ^b			Group			Time × group		
	F ^c	p	η ²	F ^d	p	η ²	F ^e	p	η ²
Readmission	5.97.20	<.001	.812	12.86	<.001	.085	3.78	.024	.027
Length of stay	1.23.25	<.001	.472	14.89	<.001	.097	3.60	.032	.025
Emergency visits	40.19	<.001	.226	.13	.722	.001	3.55	.035	.025
Defaulting days ^e	1.55	.215	.011	11.70	<.01	.078	3.25	.040	.023

^a ANOVA, analysis of variance; ACT, assertive community treatment

^b Outcomes were assessed at 12-month and 24-month follow-ups.

^c df=2

^d df=1

^e Cumulative days between missed medical appointments and date of next service contact

baseline, 12 months, and 24 months. Repeated-measures analysis of variance (ANOVA) was performed on these outcome parameters.

Results

Seventy patients were recruited into both the treatment and the control groups. All the patients in the treatment group were actively engaged and retained by the service for the duration of the 24-month intervention. The treatment group consisted of 39 men and 31 women, with a mean age of 40.3±11.7 years. Their age of onset of mental illness was 26.9±9.5. Thirteen (19%) patients had a comorbid diagnosis of either substance use or personality disorder. Their background characteristics were similar to those of the 18 patients who were recruited but declined to participate.

The principal diagnoses of patients in the treatment and control groups were schizophrenia (N=53 versus N=52), mood or anxiety disorders (N=9 versus N=16), and other (N=8 versus N=2). The results of repeated-measures ANOVA for outcome parameters are shown in Table 1.

The treatment group had 3.6±.9 readmissions at baseline, .4±.7 readmissions at 12-month follow-up, and .3±.6 readmissions at 24-month follow up, compared with 3.7±1.1, 1.1±1.4, and .8±1.2 readmissions, respectively, for the control group. Both groups had fewer readmissions over time, but the reduction was significantly greater for the treatment group.

Regarding length of hospitalization, the treatment group had stayed

123.8±64.3 days at baseline, 27.6±50.1 days at 12-month follow-up, and 12.9±26.2 days at 24-month follow-up, compared with 139.4±76.0, 79.6±98.3, and 47.2±79.5 days, respectively, for the control group. Both groups occupied fewer bed-days over time, but, again, the reduction was significantly greater for the treatment group.

The treatment group had 6.6±7.6 emergency visits per year at baseline, 3.3±7.4 visits per year at 12-month follow-up, and 3.5±6.2 visits per year at 24-month follow-up, compared with 7.2±9.3, 4.8±8.1, and 2.6±4.1 visits per year, respectively, for the control group. Both groups had fewer emergency visits over time, but the control group had fewer visits by the 24-month follow-up.

The cumulative number of defaulting days for the treatment group was 28.2±43.1 at baseline, 19.5±39.3 at 12-month follow-up, and 13.0±34.8 at 24-month follow-up, compared with 43.9±73.4, 65.5±105.6, and 50.5±95.2, respectively, for the control group. The treatment group had fewer defaulting days per year over time compared with the control group.

Discussion

The Intervention for Frequent Readmitters was the first pilot project in Hong Kong to use an ACT model to care for a group of Chinese psychiatric patients who live in the community and who have difficult-to-treat symptoms. The patients with frequent hospital admissions recruited for this study shared some characteristics that

contributed to their previous high rate of readmission. These included comorbid diagnosis of substance use or personality disorder (19%), violence propensity, illness duration of more than ten years, poor budgeting, being in debt, relationship problems, inadequate social network, and a habit of resorting to threats of violence and self-harm or of seeking the accustomed security of a hospital environment when stresses were encountered. This group of patients represented an extreme end of the spectrum of mental health service users and were broadly equivalent to the kinds of individuals recruited in overseas studies of frequent rehospitalization (13,14).

The model of intervention of this pilot program possessed many essential elements in the Dartmouth ACT Fidelity Scale (15), including low client-to-staff ratios, services that are provided in the community rather than in the office, a team approach with shared caseloads among team members, 24-hour staff availability, direct provision of all services by the team, and time-unlimited services. However, adaptations to the model were introduced to fit local circumstances, including funding, community resources, and special needs of the intended patients.

The findings of significant reduction in readmission episodes, length of hospital stays, and defaulting days among the treatment group concurred with studies in the United Kingdom (7), Australia (8), and the United States (14).

However, the finding of fewer reductions in emergency visits over time by the treatment group was unexpected. This phenomenon might arise as a countermeasure against the reduction in hospital use. The patients might have visited the emergency department more frequently if they were declined admission to psychiatric inpatient care or if they were redirected there by case managers for short-term treatment of trivial mental problems.

There were several limitations of this study. First, it used a historical rather than a concurrent control group. The main reason for use of a historical

control group was that the pilot program was administratively directed and funded. The community treatment team was required to care for most of the frequently admitted patients at Kwai Chung Hospital, making a randomized controlled trial impossible. Second, the sample size was not large. A larger-scale study with multicenter collaboration should be considered in future if further funding allows the service to be rolled out to other districts. Third, many community programs like case management had been introduced in Hong Kong during the period, paralleling the process of deinstitutionalization. These programs might have enhanced the general community services that were considered treatment as usual and accounted for a decrease in all measures of outcome parameters in the control group as well. However, ACT was demonstrated to reduce the outcome parameters significantly more than treatment as usual.

Conclusions

This was the first study to demonstrate the effectiveness of a modified form of ACT for a group of Chinese individuals with frequent admissions to a Hong Kong psychiatric hospital. The patients had shorter lengths of stay and increased contacts with psychiatric service. The positive results may encourage further funding to extend the use of ACT in caring for psychiatric patients who are among the territory's most difficult to treat. However, further research on use of this model of treatment in Hong Kong is needed. Specifically, research should include a concurrent control group by involving more centers as well as other clinical and psychosocial outcome measures, such as patients' quality of life and level of functioning and the program's cost-effectiveness.

Acknowledgments and disclosures

The authors report no competing interests.

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