Assertive Community Treatment in the Netherlands

Assertive Community Treatment in Nederland

Proefschrift

ter verkrijging van de graad van doctor aan de
Erasmus Universiteit Rotterdam
op gezag van de rector magnificus

Prof.dr. H.A.P. Pols

en volgens besluit van het College van Promoties.

De openbare verdediging zal plaatsvinden op

woensdag 13 mei 2015 om 9.30 uur

Maaike Diewertje van Vugt
geboren te Arnhem

ERASMUS UNIVERSITEIT ROTTERDAM

Ter nagedachtenis aan Thomas.

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Reading guide

Chapter 2 to 6 reflects published and submitted articles in its original form. Chapter 7 is a translation of a published article in Dutch.
The thesis contains both 'client' as 'patient'.

1. General introduction

1.1 Introduction

Assertive Community Treatment is a model for care and treatment of patients with the most severe mental illness in the community (1). Key principles of Assertive Community Treatment (ACT) are: integration of services, low patient-staff ratio, locus of contact in the community, medication management, focus on everyday problems in living, assertive outreach, and time unlimited services (2). Assertive Community Treatment has been recognized by the United States federal government's Substance Abuse and Mental Health Services Administration (SAMHSA), the National Alliance of Mental Health (NAMI), and an influential group of experts as one of six evidence-based practices1 serving people with severe mental illness (SMI) (3). ACT is also included in the Dutch Multidisciplinary Guideline for Schizophrenia (4).

ACT is widely implemented in- and outside the US. The first Assertive Community Treatment teams in the Netherlands developed in the early twenty-first century.
ACT is the most extensively studied care delivery model for people with SMI. The first studies date back to the early years of ACT, the 1970s, and since then a dozen studies have been published. Still, some research questions remain. As studies examining the association between the degree to which the ACT model is implemented and the effect on patient outcomes are rare, the role of model fidelity is unclear. Also, it is unknown whether some aspects of the model are more important than others, or whether certain aspects are associated with specific patient outcomes. This thesis focuses on the association between ACT model fidelity and patient outcomes and possible critical elements of the model.

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1   The other evidence-based practices are: Individual Placement and Support (IPS), Integrated Dual Diagnosis Treatment (IDDT), Family Psychoeducation, Illness Management & Recovery, and Medication Guidelines.

1.2 Background

People with severe mental illness

Patients with SMI have been described as 'people with severe, long-term psychiatric disorders who need considerable help and services from the mental health care sector and other sources to reach or maintain the highest feasible level of functioning' (5). Most of these patients suffer from a severe psychiatric disorder as well as complex problems such as co-occuring substance-use disorders, physical symptoms or a poor medical condition, problems in organizing their daily activities, poor living conditions, few social contacts or severely disrupted relationships, financial problems and debts, and sometimes even victimization or problematic behavior leading to criminal convictions (6).

Development of the ACT model

The history of ACT began at the Mendota Mental Health Institute (MMHI) in Madison, Wisconsin in the United States by the development of 'The Training in Community Living Model'. The director of the Research and Education Department of the MMHI, Dr. Ludwig, created a special research treatment unit that evaluated various psychosocial treatments for people with schizophrenia. Dr. Ludwig, together with the researchers Stein and Test, initially focused on developing techniques to be used in the inpatient setting. After Ludwig left for a chairmanship and was replaced by Dr. Stein, the research-trio Marx, Stein, and Test realized that if they were going to address the 'revolving-door hospitalization phenomenon' effectively, the staff had to move away from the hospital to the community (7, 8). Like other clinicians and researchers in the US, the trio struggled with the deinstitutionalization from the US state hospitals. From 1965 to 1975, the US state psychiatric hospital population declined by 80 percent and more than 400.000 patients were discharged during this period (7, 8). The purpose of the deinstitutionalization was to improve the quality of life for persons with severe mental illness. Unfortunately, the outpatient services were not sufficient and many patients were simply readmitted after a psychotic relapse, some wound up in community facilities with untrained staff and no daily activities, others were lost to follow-up, and still others became homeless or were jailed (7, 8). The pilot program of Marx, Stein & Test, a precursor of the Training in Community Living Program, was based on the view that 'the hospital itself was the problem' and the premise that 'some patients were simply too sick to be treated in the hospital'. Individuals with a limited repertoire of instrumental and problem-solving behaviors for handling stress and problems of daily life, those with powerful dependency needs, and those whose symptoms worsened under stress were especially vulnerable to becoming "undischargeable patients" (8). Marx, Stein & Test believed that the community was the place where the patient needed help the most, and that the community should become the 'therapy arena'. Their focus shifted to the community and they

developed a community treatment group (9). The community treatment group focused on helping persons with mental illness to develop skills for coping with problems of living in the community. Hospitalization was practically banned, and the treatment team worked with a variety of community resources. A small and short randomized controlled trial comparing the community treatment group with two different control groups showed that patients in the community treatment group had significantly reduced hospital stays compared with patients in the control groups (9).

This early study led to the development of an expanded, large-scale program funded by the National Institute of Mental Health that became the Training in Community Living Program. Marx, Stein, and Test implemented a new randomized controlled trial evaluating their model (7). The Training in Community Living Program was found to be effective, with significantly reduced hospitalization for program participants as well as more favorable outcomes in level of symptoms, employment, social relationships, and subjective life satisfaction (7). The cost-benefit analysis also found an advantage for the Training in Community Living Program (10). Although the program costed more than standard services, the benefits exceeded the costs. The second phase of the study followed a two-month period in which the Training in Community Living services were phased out and patients then received the same services as those in the control group for 12 months. All of the improvements, except gains in competitive employment, were eroded in this phase. The findings suggested that the program must not set arbitrary time limits for participation (8).

Training in Community Living was later named *Program of Assertive Community Treatment* (PACT), and approaches adopting PACT principles have led to a variety of different names, such as *the full service model, assertive outreach, mobile treatment teams,* and *continuous treatment teams.* The most widely used label for programs sharing the core ingredients of the PACT model became Assertive Community Treatment (11).

More than two decades after the introduction of the original model, Stein & Santos (7) presented an updated description: "ACT [assertive community treatment] is best conceptualized as a service delivery vehicle or system designed to furnish the latest, most effective and efficient treatments, rehabilitation, and support services conveniently as an integrated package. It serves as the fixed point of responsibility for providing services to a group of individuals with severe and persistent mental illness identified as needing ACT services to achieve any of several desired outcomes (e.g., reduced use of 'revolving door' hospital services, increased quality and stability of community living, normalizing activities of daily living such as competitive employment). Services are not time-limited or sequenced. Service intensity varies with changes in desired outcomes. Services are provided for as long as needed." (7).

Effectiveness of ACT: randomized controlled trials

First generation studies

ACT has been extensively studied for its effectiveness. The most authoritative review of ACT studies was done by the Cochrane Library (12). This review aimed to examine the effectiveness of ACT compared to care as usual (CAU) with the following main outcome measures: a) the number of patients remaining in care, b) psychiatric admission, c) clinical and social outcomes, and d) costs. The review only included randomized controlled trials with an *intention-to-treat* analysis. Fourteen[2] of the 75 studies met the inclusion criteria of the Cochrane Library, of which only two were conducted outside the US.

The review found that patients receiving ACT remained significantly better than patients receiving standard care. Regarding the outcome psychiatric admissions, patients in ACT were found significantly less hospitalized compared to patients in CAU, and the duration was shorter for patients in ACT. Regarding the clinical and social outcomes, nine outcome measures were examined: death, detention/arrest/police contact, living situation (included homelessness), work, mental functioning, social functioning, patient satisfaction, self-esteem, and quality of life. Significant differences were found for three of the nine outcomes: living situation, work, and patient satisfaction. Patients in ACT lived more independently, were less often homeless, and had a more stable living situation. ACT patients were less often unemployed, and patient satisfaction was higher for patients receiving ACT compared to patients in CAU (12). For the other seven clinical and social outcomes no significant differences were found between ACT and CAU. Only five trials reported costs of psychiatric admission, and only four reported total health care costs. None of the fourteen studies reported total costs. The costs for psychiatric hospitalization were lower for ACT, but not for the total health care costs. The total health care costs included ACT and as ACT is relative expensive, this conclusion was not surprising. These studies showed that ACT can be cost effective compared to standard care if ACT substantially reduces admission (12). The conclusion of the Cochrane review was that ACT is an effective model for people with SMI. In ACT more patients remain in contact with care, and ACT significantly reduced admissions and produces better outcomes on some clinical and social domains compared to CAU. If provided for patients who are at high risk for admission, ACT was cost-effective (12). Marshall & Lockwood concluded in their review that policymakers, clinicians, and patients should support the development of ACT teams. In addition, they recommended randomized controlled trials outside the US and studies which examined the critical elements of ACT.

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2   Aberg et al., 1995; Audini et al., 1994; Bond et al., 1990; Bond et al., 1988; Chandler et al., 1996; Hampton et al., 1992; Henrinckx et al., 1997; Jerrell et al., 1995; Lehman et al., 1995; Morse et al., 1992; Quinlivan et al., 1995; Rosenheck et al., 1995; Solomon et al., 1994; Test et al., 1991.

Second generation studies

Studies conducted after the Cochrane review, later than 1997, often took place outside the US, as Marshall & Lockwood (12) recommended. The randomized controlled trials were conducted in the UK (13-16), the Netherlands (17, 18), Denmark (19), Germany (20), Australia (21), and also the US (22-26). Unlike the previous studies, the UK-trials showed less positive results for ACT as compared to care as usual (13-15). The REACT-trial (16) for example did show more patient satisfaction and better engagement for ACT, while the other important outcomes such as hospitalization and mental and social functioning showed no significant differences between ACT and CAU. The Australian trial (21) did show positive results for ACT. Patients in ACT showed more improvement on social functioning; their engagement was better, and more patients remained in care. But no differences were found in admission rate or duration of hospital stay. The Danish OPUS-study (19) found among patients with a first episode psychosis positive results with respect to symptoms and functioning for ACT compared to the control group. The ACCESS-trial conducted in Germany found that the implementation of a psychotherapeutically oriented schizophrenia-specific and -experienced ACT team led to an improved patient outcome with reduced need of inpatient care compared to standard treatment. Treatment in ACT was cost-effective with regard to improved quality of life at comparable yearly costs (20, 27).

The US trials showed diverse results, though mostly in advantage of ACT. The study of Drake et al. (22) showed positive effects of ACT on some substance abuse outcomes and for quality of life. Fekete et al. (23) found positive results of ACT on quality of life, functioning, and symptoms but not for admissions. In the study of Salkever et al. (24) only admission rate and admission duration were examined; the admission rate was lower for ACT patients, but the duration showed no significant difference. Morse et al. (26) found more patient satisfaction, more stable housing, and lower costs for ACT compared to CAU. Essock et al. (25) did not find positive effects for ACT on functioning or hospital days.

The first randomized trial of ACT in the Netherlands was conducted in the capital Amsterdam (17) and showed a reduction of hospital days for ACT. No effects were found on other outcome measures. Another Dutch RCT (18) was conducted in a rural area. ACT was significantly better in sustaining contact with patients compared to CAU, but ACT showed no other positive results.

Conclusion on the effectiveness of ACT

In summary, the first generation randomized controlled trials, before 1998 and mostly conducted in the US, clearly showed positive results for ACT. These studies showed better results for ACT compared to care as usual, achieved particularly on the outcomes of stable housing, admissions, and engagement. The second generation trials, after 1998 and conducted mostly outside the US, showed inconsistent results. Some studies found some positive results for ACT, but others did not find a difference between ACT and the control group. In particular, the outcome measures "admission rate"

and "admission duration" showed, in contrast to the initial studies, no positive effects in favor of ACT. The combination of these disappointing results and the fact that ACT is an expensive model of care, led particularly in England to discussions about the value of ACT compared to standard care. Explanations for the modest results of the second generation studies were 1.) the similarity between ACT and the control groups (14, 28), 2.) the lack of model fidelity of the ACT teams (29), and 3.) the relatively low hospital use at the start of the study (30, 31).

In 2010 the Cochrane Library published a review of randomized controlled trials on intensive case management (32). In this review intensive case management (ICM) is compared with standard care or with non-intensive case management. ICM is described as a model that originated from ACT and case management. This includes ACT, Assertive Outreach, and case management if the caseload is less than 20 patients per one FTE. ICM was found effective in enhancing many outcomes relevant to people with severe mental illnesses. Compared to standard care ICM was shown to reduce hospitalization and increase retention in care. ICM showed no clear advantages over non-ICM care (caseload>20 patients per one FTE). In addition, it was found that the ACT model fidelity played a role in the results of ICM. ICM achieved the greatest results in a population with a high level of hospitalization at baseline (32).

ACT model fidelity

As Assertive Community Treatment has been disseminated and adapted, the need for standards increased. Despite the fact that the core ingredients of ACT are well-articulated, the implementation of ACT was variable (33, 34). Therefore, a tool for monitoring the fidelity of ACT implementation was developed, the Dartmouth Assertive Community Treatment Scale (DACTS; 35). The DACTS consists of 28 items each rated on a 5-point scale (1=not implemented and 5=fully implemented). The developers of the ACT model believed that there would be an association between the degree to which the ACT model is implemented (model fidelity) and the effect on patient outcomes. This assumption was examined in a few studies (36, 22, 37, 38, 31, 32, 39).

The study of McGrew et al. (36) found that in 18 ACT teams in the US, higher ACT model fidelity was associated with less days spend in psychiatric hospitals. Model fidelity was assessed using a 17-item subset of expert-identified critical ingredients to construct a fidelity index with three subscales: staffing, organization, and service. The correlation was significant for the total fidelity scale and for the organization and staffing subscales, but not for the service subscale. In the study of Drake et al. (22, 37) the association between ACT model fidelity and outcomes in dual diagnosis patients was examined. No specific model fidelity scale was used, but nine essential components of Assertive Community Treatment and four essential components of dual disorder programs were assessed. Four special dual diagnosis teams were classified as high fidelity teams and three as low fidelity teams. Patients in high fidelity ACT teams showed greater reductions in alcohol and drug use and

attained higher rates of remission from substance abuse disorders than those in low fidelity teams. Patients in high fidelity ACT teams also had higher rates of retention in treatment and fewer hospital admissions than those in low fidelity teams. No differences were found in length of hospital stay and other residential measures, psychiatric symptoms, family and social relations, satisfaction with services, and overall life satisfaction.

A review of Latimer (38) included nineteen randomized studies and 15 nonrandomized studies describing ACT programs based on 2 criteria: 1.) provision of services primarily in the community and 2.) shared caseloads. Teams were coded as high fidelity if in addition to following a shared caseload model and providing the majority of services in the community they met at least four of the following five criteria: staff to client ratio of 1:12 or better, a psychiatrist on staff, at least one nurse on staff, at least some coverage outside of normal working hours, and at least two team meetings every week. Teams that met three or four of the criteria were classified as medium fidelity teams, teams that met only two or fewer criteria were classified as low fidelity teams. The review found that high fidelity teams appeared to reduce hospital days more than lower fidelity teams. Also, ACT appeared to increase the proportion of patients who live in independent housing situations, but the effect on the use of supervised housing, and therefore on housing costs, is ambiguous. The effects on the use of other resources are inconsistent across studies. Latimer concluded that "the most reliable cost offset to ACT treatment costs appears to be reduced hospital use" (38).

In a systematic review and meta-regression of randomized controlled trials (31) intensive case management was compared with standard care or low intensity case management with mean days per month in hospital as a dependent variable was examined. To determine fidelity, the Index of Fidelity to Assertive Community Treatment (IFACT) subscales 'team membership' (4 items) and 'team structure and organization' (7 items) were used (36). The IFACT was used (instead of the DACTS) as the scale is brief and can be retrospectively completed from (un)published data. The review found that details of team structure and organization (such as shared caseload and daily team meetings) were more important than the details of staffing (ratio of patients to staff, total size of the team, and the extent of psychiatric and nursing input to the team).

The pre-post study of Bond et al. (34) was the first published fidelity-outcome study that measured ACT model fidelity with the DACTS. Ten teams varied in their implementation from marginal to high fidelity, with DACTS scores ranging from 3.6–4.2 (mean=3.9, SD=0.2). The correlation between DACTS fidelity and reduction of state hospital days was a moderately large but non-significant correlation. One of the authors' explanation of this "unexpected outcome" was the restriction of range in fidelity scores among the sites. Even the lowest-fidelity ACT teams in the study were substantially higher than the fidelity for traditional case management or even typical intensive case management programs (34). Another explanation was the limited number of participating teams in this study.

The Cochrane review on intensive case management (ICM) (32) found within their meta-regression that the more ICM is adherent to the ACT model the better it is at decreasing time in the hospital.

Fidelity was determined by the IFACT (36). The review also found that the higher the baseline hospital use in the population the better ICM is at decreasing time in the hospital, and when combining both these variables within the model, fidelity was no longer significant, but the 'baseline hospital use' result was still significantly influencing time in the hospital.

The evaluation study of Brugha et al. (39) of Assertive Outreach (AO) teams in the UK did not find an association between AO characteristics and the outcome inpatient care. The characteristic of AO analyzed in this study was joint management of health and social service elements of community care defined as requiring a common budget and at least one social worker and at least one health worker in the team. Additional, joint management was combined with seven other team characteristics (including a proportion of support workers, multidisciplinary team working, out of hours working, a psychiatrist on the team, a range of specialist skills available, specialist psychological interventions, and caseload per team member) into a total policy conformity score. For both the joint management and the conformity score no associations were found with the outcome inpatient care.

To conclude, four of the six studies showed the importance of ACT model fidelity, but the research also showed ambiguous results and unclearness about essential elements of the model (table 1). This may be due to 1.) the use of different scales assessing model fidelity, 2.) different outcome measures, and 3.) different follow-up periods. Probably as a consequence, different interpretations about the importance of model fidelity occurred, as high fidelity ACT is endorsed in the US, though not in the UK. With the more diffuse results for ACT in the second generation studies, research on the association between fidelity and outcomes became more relevant. The fidelity-outcome studies discussed above show that research on the importance of ACT fidelity is rare and has its limitations. One important limitation is the use of different measures of model fidelity and the fact that, despite its extensive use, only one study measured fidelity with the DACTS (34). As a result, the operationalization of fidelity to the ACT model differs between the studies. Other study limitations are the retrospectively assessed model fidelity and the restriction of only one outcome measure, namely inpatient care. The research indicates a lack of knowledge about ACT model fidelity and outcomes and the essential components of the model.

Table 1 Research on ACT fidelity and outcomes on patient-level

Study fidelity-outcomes	Measured team characteristics	Patient' outcomes assessed	Results
McGrew et al., 1994 (36) N= 18 teams	A 17-item subset of expert-identified critical ingredients to construct a fidelity index with three subscales: staffing, organization, and service.	Hospital use	In 18 ACT programs, higher model fidelity scores were associated with less days in psychiatric hospitals. The correlation was significant for the total scale and for the organization and staffing subscales but not for the service subscale.
Drake et al., 1998 (22); McHugo et al., 1999 (37) N =87 patients; N=4 teams	Nine essential components of assertive community treatment and four essential components of dual disorder programs were assessed (no special model fidelity scale was used): community locus, assertive engagement, high intensity, small caseload, continuous responsibility, staff continuity, team approach, multidisciplinary staff, work closely with support system, individualized substance abuse treatment, dual disorders model, dual disorders treatment groups, dual disorders focus.	Substance abuse, hospital use, housing, psychiatric symptoms, functional status, quality of life.	Patients in high-fidelity ACT teams showed greater reductions in alcohol and drug use and attained higher rates of remission from substance abuse disorders than those in low-fidelity teams. Patients in high-fidelity ACT teams had higher rates of retention in treatment and fewer hospital admissions than those in low-fidelity teams. No differences were found in the length of hospital stay and other residential measures, psychiatric symptoms, family and social relations, satisfaction with services, and overall life satisfaction.
Latimer, 1999 (38) Review N=3652 patients N=34 studies (19 randomized studies and 15 nonrandomized studies)	Teams were coded as high fidelity if, in addition to following a shared caseload model and providing the majority of services in the community, they met at least 4 of the following 5 criteria: staff to client ratio of 1:12 or better, a psychiatrist on staff, at least one nurse on staff, at least some coverage outside of normal working hours, and at least two team meetings every week. Teams that met 3 or 4 of the criteria were classified as medium fidelity teams, teams that met only two or fewer criteria were classified as low fidelity teams.	Hospital use, housing, costs, consumption of resources other than hospitalizations and housing.	Higher fidelity teams appear to reduce hospital days significantly more than lower fidelity teams. ACT appears to increase the proportion of patients who live in independent housing situations, but the effect on the use of supervised housing and therefore on housing cost is ambiguous. The effects on the use of most other resources are inconsistent across studies. Overall, ACT appears to result in somewhat lower costs.

Study fidelity-outcomes	Measured team characteristics	Patient' outcomes assessed	Results
Bond & Salyers, 2004 (34) N= 317 patients; N=10 teams	Total DACTS score (3 of the 28 items were excluded)	Hospital use (state hospital days)	The Pearson correlation between DACTS fidelity and reduction of state hospital days was a moderately large but non-significant correlation in the predicted direction.
Burns et al., 2007 (31) Review N=5961 patients; N=29 trials subdivided in N=52 centers	IFACT subscales 'team membership' and team 'structure and organization'	Hospital use	When hospital use is high, intensive case management can reduce it, but it is less successful when hospital use is already low. Team organization is more important than the details of staffing.
Dieterich et al., 2010 (32) Review N= 7328 patients; N= 38 trials	IFACT subscales 'team membership' and 'team structure and organization'	Hospital use (mean number of days per month in hospital)	The more ICM is adherent to the ACT model, the better it is at decreasing time in hospital, and the higher the baseline hospital use in the population, the better ICM is at decreasing time in hospital.
Van Vugt et al., 2011 (40) N=530 patients; N=20 teams	ACT fidelity, measured by the DACTS. Total DACTS score en the three subscales.	Hospital use, mental and social functioning, needs for care, homelessness	Higher ACT fidelity (especially the subscale team structure) was associated with better psychosocial functioning (HoNOS). The total fidelity score was also associated with less homeless days.
Brugha et al., 2012 (39) N=1096 patients; N=94 teams	Joint management (defined as requiring a common budget and at least one social worker and at least one health worker in the team); total policy conformity score.	Hospital use	Joint management and the conformity score were not significantly associated with use of psychiatric hospital beds.

Development of Flexible ACT

From 2005 on, another care delivery model for SMI patients was developed. Flexible Assertive Community Treatment, Flexible ACT, was inspired by and based on the ACT model, but with its adaptions more suitable in rural areas and able to serve a broader range of patients with severe mental illness (41). The Flexible ACT team is a case management team with partly an individual approach and partly a team approach; the approach varies from patient to patient, depending on the patient's needs. For more stable long-term patients, Flexible ACT provides coordinated multidisciplinary treatment and care by individual case management. Unstable patients at risk of relapse, neglect, and readmission are provided with intensive assertive outreach care by the same team, working with a shared caseload for this subgroup (41).

Contrary to ACT, (published) research on the Flexible ACT model is limited. Up until now, there are no randomized controlled trials on Flexible ACT. A Dutch observational study examining the effects of Flexible ACT (42, 43) found that the proportion of patients that made the transition to remission increased from 19% in the period before the introduction of Flexible ACT, to 31% in the period after. In a UK-study (44) the outcomes of patients who were transitioned from Assertive Outreach Teams (AOT) to Community Mental Health Teams (CMHT) working according to the Flexible ACT model were examined. The period in CMHT resulted in a significant decrease in inpatient care compared to the period in AOT. Another Dutch study (45) compared three groups of SMI patients: patients receiving Flexible ACT care at the time of the study, patients who once received Flexible ACT care but at the time of the study did not receive Flexible ACT care, and patients who never received Flexible ACT care. The study found that patients receiving Flexible ACT had more outpatient contacts and a higher level of psychosocial functioning compared to the other two patient groups.

Despite the limited research on Flexible ACT, in the last five years the model is widely implemented in the Dutch mental health care system. At the time of this thesis, ACT and Flexible ACT teams are serving SMI patients, covering almost every part of the Netherlands.

Similar to ACT, despite the available description of the core principles of Flexible ACT (40), the implementation of Flexible ACT varied between teams and the need for standards increased. In line with the ACT fidelity scale, a Flexible ACT fidelity scale was developed (46).

1.3 Content of the thesis

This thesis presents research on the associations between ACT model fidelity and the effects for patient outcomes in the Dutch context. We also present a new scale for assessing Flexible ACT model fidelity.

In a prospective longitudinal study, conducted from 2005 – 2008, twenty outpatient teams for SMI patients located in different regions of the Netherlands participated. The teams included in the study made different choices for the implementation of outreach care for patients with severe mental illness. Adherence to ACT fidelity criteria was not always their aim.

Patients included in the study assessing the association between model fidelity and effect had to meet two of the following inclusion criteria:(i) a period of homelessness during the past year; (ii) an average of 6 outpatient contacts per month during the past year; (iii) Global Assessment of Functioning score of <=40 at time of study entry; (iv) 2 admissions or 50 hospital days in the past year.

We selected these criteria since we wanted to include only the most severely mentally ill patients, for whom ACT was originally developed. With this design we connected with the existing Dutch mental health practice and developments in the care for people with severe mental illness. Since the teams had different aims regarding ACT model fidelity, a sufficient range in model fidelity was expected.

As ACT teams were slowly replaced by Flexible ACT teams in the Netherlands, we conclude this thesis with the subsequent evolution of the Flexible ACT model fidelity scale.

1.4 Structure of the thesis

This thesis addresses two principal aims:
- To study the association between (elements of) the ACT model fidelity and patient 'outcomes
- To describe the development of the Flexible ACT scale.

Chapter 2. In chapter 2 we describe the importance of ACT fidelity on psychosocial outcomes, and the essential ingredients of the model are examined.

Chapter 3. Recently, Dutch mental health care organizations adopted the integration of consumers in mental health services. A consumer provider as a member of the team is part of the ACT model. A number of studies demonstrated improved patient outcomes of teams with consumer provider services as compared to the outcomes of non-consumer delivered services (47-49). However, other studies found no differences in outcomes between teams with or without consumer provider services. In this thesis additional knowledge about this subject was obtained by examining the association between the employment of consumer providers in a team and outcomes on the patient-level.

Chapter 4. In chapter 4 long term outcomes and the possible contribution of ACT for substance abuse problems will be described. Patients with severe mental illness are more likely to have substance abuse disorders than the general population. For SMI patients, substance abuse disorders are associated with a variety of negative outcomes, including increased risk of relapses and rehospitalizations (50), homelessness (51), violence (52), and higher use of services (53). The high rate of substance abuse and dependence and its effects on the course of psychiatric illness has made the identification and treatment of patients with co-occurring disorders a high priority. Only two controlled studies (25, 22) have specifically compared ACT and standard clinical case management for delivering integrated dual diagnosis treatment.

Chapter 5. In this chapter we examine the forensic subpopulation in the sample and the possible contribution of the ACT model to their forensic and psychosocial problems. Patients with severe mental illness frequently have contact with the justice system (54). Previous studies have shown that SMI patients with a criminal history have poorer baseline and long term outcomes than SMI patients without a criminal history (54-56). Unfortunately, ACT has not proven to be more effective than other treatments in reducing criminal justice contacts (2, 57). The results of the previous studies indicate a difficult interplay between mental illness, substance abuse, social exclusion, homelessness, and delinquency.

Chapter 6. In chapter 6 we examined this issue more closely, comparing the psychosocial problems of native and ethnic SMI patients in the sample and the role of the ACT model. Patients from ethnic minority groups with severe mental illness represent a population with specific vulnerabilities apart from their psychiatric illness (58). Although ACT has been well studied in the general population in North America and in parts of Europe, studies which have examined its effectiveness when used with specific populations of persons with SMI, such as recent immigrants, refugees, and persons from ethnic minorities, are rare (58).

Chapter 7. We conclude with a descriptive chapter of the development of the fidelity scale for Flexible ACT (chapter 7).

Research questions

In order of appearance, the following research questions were addressed in this thesis:

(1) Is there an association between ACT model fidelity and long long-term psychosocial outcomes of patients with severe mental illness? (chapter 2)

(2) Is there an association between employing consumers of mental health services as consumer-providers in outpatient teams and long long-term psychosocial outcomes for patients with severe mental illness? (chapter 3)

(3) A. Do SMI patients with and without addiction problems differ in psychosocial outcomes at baseline and at 24 months follow-up?
B. Is ACT model fidelity associated with improvements in substance abuse problems?
C. Is the level of other psychosocial problems associated with improvements in substance abuse problems? (chapter 4)

(4) A. Can we confirm differences in the level of psychosocial problems between SMI patients with and without a recent criminal history?
B. Is there an improvement of delinquency outcomes over time?
C. Is ACT model fidelity associated with improvements on delinquency outcomes?
D. Is the level of psychosocial problems associated with improvements on delinquency outcomes? (chapter5)

(5) A. Do SMI patients from ethnic minority groups differ from native SMI patients on psychosocial outcomes at baseline and at 24 months follow-up?
B. Does ACT results in similar outcomes for native patients and patients from ethnic minorities? (chapter 6)

(6) The development of the fidelity scale for Flexible ACT. (chapter 7)

2. Assertive Community Treatment in the Netherlands: outcome and model fidelity

Objective

The implementation of assertive community treatment (ACT) varies widely. To date, the association between model fidelity and effect has not been investigated in Europe. We investigated the association between model fidelity and outcome in the Dutch mental health system.

Method

In a prospective longitudinal study, ACT model fidelity and patient outcomes were assessed in 20 outpatient treatment teams. Patients with severe mental illness (n = 530) participated in the study. Outcomes were assessed 3 times using the Health of the Nation Outcome Scales (HoNOS), the Camberwell Assessment of Need Short Assessment Schedule (CANSAS), and the number of hospital days and homeless days during a 2-year follow-up period. Data were analyzed using multilevel statistics.

Results

High ACT model fidelity was associated with better outcomes on the HoNOS and less homeless days. Among all of the ACT ingredients, team structure was associated with better outcomes. No associations were found between ACT model fidelity, number of hospital days, and CANSAS scores.

Conclusions

Our evidence supports the importance of model fidelity for improving patient outcomes.

ACT is a model for care and treatment of patients with the most severe mental illness in the community (1). Key principles of ACT are: integration of services, low patient– staff ratio, locus of contact in the community, medication management, focus on everyday problems in living, assertive outreach, and time unlimited services (2). Early research into the effectiveness of ACT, especially regarding reducing the duration of hospital stay, was done in the United States (12).

Later, studies predominantly of United Kingdom provenance showed no effects of ACT, compared with treatment as usual (59, 14, 16); likewise a later US study (25) did not prove distinctive benefits for ACT. The Danish OPUS study (60) found positive results of ACT for first-episode psychosis patients. A recent Dutch randomized controlled trial (18) showed that ACT was significantly better in sustaining contact with patients, but not in reducing symptoms and psychiatric hospitalizations. Explanations for the recent modest results are the similarity between ACT and the control groups (care as usual) (61, 28), the lack of ACT model fidelity (29), and relatively low hospital use (30, 31).

Nevertheless, ACT is widely implemented in the Netherlands, and the Dutch schizophrenia guidelines recommend ACT as the primary service provision for the population of patients with severe mental illness. However, not all ACT teams implement the full ACT model.

ACT model fidelity can be measured using the 28-item DACTS (34, 35). Studies (36-38) have shown that model fidelity is associated with better outcomes for patients. However, previous research (36-38, 62) to examine the association between ACT model fidelity and outcomes was done on a small scale with a limited number of teams, and (or) did not study the importance of specific ACT ingredients.

In our study we examined the association between ACT fidelity, specific ACT ingredients, and patient outcomes in a large cohort of patients from 20 outpatient teams. The premise was that positive outcomes of ACT are at least partly dependent on the degree to which an ACT team faithfully implements the prescribed elements of the model and thus achieves high fidelity.

Method

Design

This was a prospective longitudinal study, conducted between 2005 and 2008, of 20 outpatient teams for patients with severe mental illness, located in different regions of the Netherlands. The teams included in our study made different choices for the implementation of outreaching care for patients with severe mental illness. Adherence to ACT fidelity criteria was not always the aim. In contrast with other countries, such as the United States and Canada (63-65) the implementation of the ACT model in the Netherlands was not part of a mental health reform and shift in locus of care from hospital to community. There was no government funding and support. The implementation of ACT was a choice of the mental health organizations, with the mission to improve the situation of the most severely mentally ill patients.

Patients included in our study had to meet 2 of the following inclusion criteria: a period of home-lessness during the past year; an average of 6 outpatient contacts per month during the past year; GAF score of 40 or less at time of study entry; or 2 admissions or 50 hospital days in the past year. We selected these criteria because we wanted to include only patients with the most severe mental illness, for whom ACT was originally developed.

Patient Outcome Measures

The outcome measures in our study were: level of functioning, (un)met needs, hospital days, and homeless days. Patients were followed-up for 24 months, with data collection at baseline (T0), 12 months (T1), and 24 months (T2).

Data were collected on: demographics (including age, sex, living situation, marital status, educational history, and ethnicity), diagnosis (Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, as assessed by the psychiatrist of the team) (66), mental and social functioning (HoNOS) (67), need for care (CANSAS) (68), working alliance (69), societal participation (including employment status), and use of mental health care. The HoNOS is a widely used and valid 12-item observer-rated measure intended to map a patient's mental state and functioning. In our analysis, we used the mean total score of the 12 items, which expresses the total level of functioning. In addition, we analyzed the 4 subscales of the HoNOS: behavioural problems (items 1 to 3), impairment (items 4 and 5), symptomatic problems (items 6 to 8), and social problems (items 9 to 12). The CANSAS is a measure assessing the health and social needs of people with mental health problems. We used the rater-perspective version. For our study, we added 3 items on the 22-item CANSAS, including personal recovery, paid employment, and side effects of medication. In the analysis, we included the total unmet needs and the total met needs regarding the 25 items.

The outcome data were collected by trained mental health care workers. To optimize reliable measures, a central training was given before the T0 assessments; booster sessions were given 1 year later (before T1) and after 2 years (before T2). We used the train-the-trainers method; the centrally trained care workers trained their team members at the sites.

ACT Model Fidelity
Fidelity to the ACT-model was assessed at baseline and after 2 years with the DACTS, which was translated into Dutch (70). The DACTS consists of 28 items, each rated on a 5-point scale (1 = not implemented and 5 = fully implemented). A mean score of 4.2 or more is considered high fidelity (35, 71). In the scale, 3 dimensions are distinguished: team structure, organization structure, and service delivery features. The domain team structure includes caseload size, shared caseload, team meeting, team leader, and staffing (for example, psychiatrist and vocational specialist). The organization domain assesses items as full responsibility for treatment services, responsibility for crisis services, and time unlimited services. The domain service delivery includes in-vivo services, frequency of contact, and individualized substance abuse treatment.

Studies have suggested that the DACTS has adequate internal consistency, acceptable to excellent interrater reliability, and is sensitive to change over time (34, 72).

A central DACTS training for auditors was given at the beginning of our study by a US-trained researcher (The ACT Center of Indiana). All auditors were well acquainted with the ACT model. Two independent auditors visited the teams jointly, but assessed ACT fidelity separately. The fidelity scores were derived from different sources: team meeting observation, interviews with team members, contact with patients, document screening, and patient files, including contact registration data. The final rating was based on consensus, integrating the observations of both assessors.

The auditors were not aware of the outcome ratings of the patients participating in our study.

Statistical Analyses
Analyses were performed using Stata 9.2 (Stata Corporation, College Station, TX). Because the data consisted of multiple measurements clustered in subjects (patients) and teams, the data were analyzed with (3-level) multilevel regression (73).
We used the Stata command xtmixed. The dependent variables in the regression models were the outcome variables: level of functioning (HoNOS total score and the 4 subscales), total unmet needs (proportion unmet needs CANSAS) and total met needs (proportion of met needs CANSAS), the number of hospital days for psychiatric problems, and the number of homeless days. For each parameter (dependent variable) we tested DACTS fidelity (total score), time (coded as 0, 1, and 2) and

the interaction Time × Fidelity, hereby correcting for age, ethnicity, and sex. Random effects were modelled for the level parameters fixed for the independent variables. Our main hypothesis yields more improvement over time. In addition to the total DACTS score, we analyzed the 3 domains of the fidelity scale, as described above.

Results

Patient Characteristics

In total, 530 patients were included. The most common combination of selection criteria was GAF (78% of the patients had a score of 40 or less) and outpatient contact (54% of the patients met the criterion of 6 outpatient contacts per month during the past year).

After 2 years, we had data for 321 patients (61%). Twelve patients died; 4 as a result of suicide. There was no relation between the number of study dropouts (meaning loss to follow-up as the mental health care workers were not able to collect the necessary data in due time) and model fidelity.

We assessed selective study dropouts with independent sample t tests (95% CI) or the nonparametric Mann- Whitney U test. The 2 groups did not differ at baseline on: met needs and the number of hospital days for psychiatric problems ($P > 0.05$). Our study dropouts had a significantly worse HoNOS total score ($t = 2.93$, df = 517, $P < 0.01$), unmet needs ($t = 4.72$, df = 526, $P < 0.001$) and number of homeless days ($z = -2.12$, $P = 0.03$).

Most of the sample had a diagnosis of schizophrenia (77%) and was male (71%). The average age at baseline was about 42 years (Table 1).

Table 1 Demographic and illness characteristics at baseline (n = 530)

Variable	%
Sex, male	71
Ethnicity, Dutch	51
Marital status: married or living together	8
Work, paid job	2
Homeless	13
Homeless in the past year	32
Diagnosis, schizophrenia	77
Addiction problem	54
Hospitalization(s) in past year	46
	Mean (SD)
Age, years	41.6 (11.3)
GAF symptoms	38.6 (14.9)
GAF disability	36.0 (11.8)

Model Fidelity

The teams varied from low (2.8) to high (4.1) DACTS fidelity at baseline. One team was near to full implementation of the model (mean 3.3, SD 0.4). Six of the 20 teams achieved a fidelity score above 3.4, 8 teams had scores ranging from 3.0 to 3.4 and 6 teams had scores below 3.0. Two years (T2) later, the DACTS scores were similar (range 2.7 to 4.0; mean 3.3, SD 0.3). Five teams achieved a fidelity score above 3.4, 12 teams scored between 3.0 to 3.4, and 3 teams had low fidelity scores (<3.0).

The fidelity scores on the 3 domains of the DACTS at baseline were: team structure mean 3.5 (SD 0.6), organization 3.9 (SD 0.4), and service delivery features 2.6 (SD 0.5). Two years later the figures were, respectively, means 3.5 (SD 0.6), 4.0 (SD 0.3), and 2.7 (SD 0.3).

Baseline Associations

At baseline, we found an association between ACT model fidelity and severity of problems. High fidelity was associated with worse scores on HoNOS total score, unmet needs ($t = 4.91$, df = 517, $P < 0.001$; $t = 4.78$, df = 526, $P < 0.001$; with independent sample t test and 95% CI) and the number

of homeless days (z = −7.80, P < 0.001, with 2 sample Mann-Whitney U test). A reversed association was found on met needs (t = 3.07, df = 526, P < 0.01) and the number of hospital days for psychiatric problems (z = 2.69, P < 0.01).

Longitudinal Patient Outcomes
In Table 2, patients improved on all outcome variables during the research period from 2005 to 2007, except for the number of hospital days.

Table 2 Outcome data from 2005 to 2007: time effects

Outcome measure	2005 Mean (SD)	2007 Mean (SD)	Significance, P	ES (Cohen's d)
HoNOS (total score)[a]	16.8 (6.7)	15.1 (6.6)	<0.001	0.24
HoNOS (total score)[a]	16.8 (6.7)	15.1 (6.6)	<0.001	0.24
Unmet needs (total of 25 items)[a]	6.1 (3.8)	3.4 (3.8)	<0.001	0.71
Met needs (total of 25 items)[a]	6.0 (3.5)	6.6 (3.5)	<0.05	−0.01
Hospital days, psychiatric[b]	41.9 (76.6)	42.8 (90.5)	ns	−0.01
Homeless days[b]	63.5 (124.7)	32.0 (92.9)	<0.001	0.29

df = 320, except for HoNOS *df* = 310
[a]   Paired t test 95% CI
[b]   Wilcoxon signed-rank test (nonparametric test) ES = effect size; ns = not significant

Outcomes by Fidelity Over Time
We found a significant interaction between time and ACT fidelity scores when analyzing HoNOS total outcome scores (β = −0.16, z = −3.09, 95% CI −0.27 to −0.06, P = 0.002). On the subscales of the HoNOS, fidelity was associated with change in symptomatic problems (β = −0.18, z = −2.24, 95% CI −0.35 to −0.02, P = 0.03) and social problems (β = −0.21, z = −2.67, 95% CI −0.36 to −0.06, P < 0.01). The subscales behavioural problems (β = −0.11, z = −1.65, 95% CI −0.23 to 0.02, P = 0.09) and impairment showed no associations (β = 0.04, z = 0.57, 95% CI −0.11 to 0.20, P = 0.57). Equally, for the CANSAS: unmet needs (β = 0.01, z = 0.78, 95% CI −0.02 to 0.05, P = 0.43) and met needs (β = −0.02, z = −1.56, 95% CI −0.05 to 0.01, P = 0.12). There was no significant interaction effect between fidelity and time regarding the number of hospitalization days (β = 10.46, z = 1.23, 95% CI −6.16 to 27.07, P = 0.22). High fidelity was associated with the reduction in homeless days (β = −33.21, z = −3.53, 95% CI −51.63 to −14.78, P <0.001).

In addition to the analysis with the total fidelity score, we used similar regression models for the 3 domains of the fidelity scale (Table 3). We found significant interactions between time and the domain team structure and decreases for the HoNOS total scores, and HoNOS subscale symptomatic problems. For the organization domain and service delivery features domain, we found no associations.

Table 3 Associations between model fidelity for the three dimensions of the DACTS and outcomes

	Team structure*-time	Organisation*time	Delivery features*time
Variable			
HoNOS Total	β=-0.10 z=-2.12 CI -0.19 to -0.01 p=0.03	β=0.03 z=0.46 CI -0.10 to 0.16 p=0.64	β=-0.04 z=-0.58 CI -0.19 to 0.11 p=0.56
HoNOS subscale behavioural problems	β=-0.01 z=-0.21 CI -0.12 to 0.10 p=0.83	β=0.03 z=0.40 CI -0.12 to 0.18 p=0.69	β=-0.15 z=-1.61 CI -0.33 to 0.03 P=0.11
HoNOS subscale impairment	β=0.01 z=0.16 CI -0.12 to 0.14 p=0.88	β=0.10 z=1.07 CI -0.08 to 0.27 p=0.29	β=-0.03 z=-0.27 CI -0.24 to 0.18 p=0.79
HoNOS subscale symptomatic problems	β=-0.18 z=-2.50 CI -0.32 to -0.04 p=0.01	β=0.10 z=0.98 CI -0.10 to 0.29 P=0.33	β=0.05 z=0.43 CI -0.18 to 0.28 p=0.67
HoNOS subscale social problems	β=-0.10 z=-1.54 CI -0.24 to 0.03 p=0.12	β=-0.05 z=-0.52 CI -0.23 to 0.13 p=0.60	β=-0.04 z=-0.33 CI -0.26 to 0.18 p=0.74
Total unmet needs	β=0.11 z=0.80 CI -0.02 to 0.04 p=0.42	β=-0.01 z=-0.41 CI -0.05 to 0.03 p=0.68	β=-0.00 z=-0.04 CI -0.05 to 0.05 p=0.97
Total met needs	β=-0.00 z=-0.00 CI -0.02 to 0.02 p=0.99	β=0.00 z=0.19 CI -0.03 to 0.03 p=0.85	β=-0.03 z=-1.58 CI -0.07 to 0.07 p=0.11
Hospital days, psychiatric	β=7.07 z=0.97 CI -7.28 to 21.43 p=0.33	β=-8.67 z=-0.87 CI -28.09 to 10.75 p=0.38	β=5.16 z=0.41 CI -19.51 to 91.82 p=0.68
Homeless days	β=-11.97 z=-1.46 CI -27.98 to 4.05 p=0.14	β=-3.76 z=-0.35 CI -25.07 to 17.55 p=0.73	β=-16.68 z=-1.16 CI -44.92 to 11.57 p=0.25

Discussion

Our study found that ACT model fidelity was associated with patient outcomes. Specifically, we found an association between fidelity and improvements on HoNOS total scores, the subscales symptomatic problems and social problems of the HoNOS, and homeless days.

Previous fidelity-outcome studies, did not find better results for patients in high-fidelity teams on level of functioning. We were able to assess which fidelity domain explains this outcome best. Team structure ingredients were associated with better functioning outcomes on the HoNOS total score and the HoNOS subscale of symptomatic problems. This domain includes items such as shared caseload, daily team meetings, and a team leader who participates in patient care. This is in agreement with Burns et al (31) systematic review and meta-regression of randomized controlled trials. They concluded that team organization (such as shared caseload) is more important than the details of staffing. The distinguishing characteristic of ACT compared with standard care, is that team approach appears to be of great importance.

The most solid empirical findings of ACT in outcome studies are: more stable housing (2, 47), reduction of admission days, sustained contact with patients, and treatment satisfaction (2). With exception for treatment satisfaction, which was not assessed in our study, the results of our study are partly in agreement with former research.

ACT was developed as an alternative for the hospitals (1); we found a reduction in homeless days but no reduction of hospital days. Apparently the teams did not focus on reducing admission days but on improving the patient's functioning and well-being. A previous Dutch ACT study (18) did not find (positive) results on the outcome hospitalization. Compared with other countries, the bed rate in the Netherlands remains among the highest in the world (75).
Unlike other countries (64, 76-78) deinstitutionalization has not been a topic of high priority for the Dutch government. The Netherlands can be characterized as a caring society, where marginalization is not accepted. (In)voluntary admission is considered as a positive option that is used to improve the patients' health or to shelter people in need. This may explain why we did not find a reduction of hospital days. The focus on improving the patient's functioning and well-being is reflected in the positive results on level of functioning and homeless days. Sustained contact with patients was not an outcome at patient level. The DACTS criterion of no drop out showed high scores for all the teams. Obviously, keeping patients in care is an important theme for all outpatient teams and is not particularly associated with high ACT model fidelity.

At baseline we found that patients in high-fidelity teams had more unmet needs and also more met needs, but we did not find an association between (un)met needs and fidelity over time. Apparently,

an improvement of well-being, as reflected by the HoNOS scores, does not automatically result in less unmet needs.

The strength of our study is its longitudinal design, the large number of teams that were involved, and the broad set of outcome measurements that were used. It uses state-of- the-art statistical techniques (correcting for the nested data using the multilevel technique) to adequately assess the impact of different levels of ACT fidelity on change over time.

There was a considerable study drop out, which is not surprising as the included patients belong to the most severe patients within mental health services. The patients who dropped out of the study had more problems at baseline than the patients who remained in the study. Nevertheless, study drop out was not related to model fidelity.

At baseline we found an association between ACT model fidelity and severity of problems. Teams with high fidelity showed worse HoNOS and unmet needs at baseline, compared with teams with low fidelity, but the number programs with high fidelity. The concentration of severe patients in their caseload might be a stimulating factor for teams to work according to the ACT model; it is a tool that gives direction and support. It may be that in low- fidelity teams there was a floor effect, meaning that for these teams it was not possible to reduce the problem levels of the patients any further. Importantly, the multilevel analysis modelled with random effects for the nested patients and teams, and controlled for the differences in baseline scores between teams. Therefore, it is unlikely that the higher HoNOS scores and the higher number of homeless days at baseline in the high-fidelity teams explained the association between high DACTS scores and better outcomes during follow-up. If this would have been the case, we would also have expected an association be- tween high fidelity and unmet needs over time, because at baseline these 2 were also associated. However, this was not found.

The data were collected by trained mental health care workers. We attempted to reduce the rating bias by training the care workers repeatedly. The DACTS auditors were not aware of scores on the outcomes measures. Our study was not a randomized controlled trial with an intervention (ACT) and a control group (care as usual), therefore we can assume an association between team-level ACT fidelity and individual outcomes but not a causal relation.

Our inclusion of many outcome variables may have increased the chances of finding significant results, though only 5 tests (HoNOS, [un]met needs, hospital days, and homeless days) were part of our main hypothesis and 2 of these were significant. Therefore the chance of type I error is low. Our important outcomes, the association between total fidelity score and HoNOS and homeless days,

are statistically solid. The results remained significant after controlling for possible confounders. Moreover, the P values for HoNOS and homeless days are low enough to withstand the Bonferroni test on the 5 primary outcome measure. Possibly, the results were not caused by specific ingredients of the ACT model, but are a mere consequence of working according to a specific frame of reference. By grounding care innovation in a specific theoretical model, a team creates cohesion, motivation, and enthusiasm. The choice to work according to evidence-based practices is primarily made in teams with higher levels of training and aiming to improve quality. It is possible that these aspecific factors caused the association between fidelity and outcome.

Not all DACTS domains point in the same direction. Therefore, future studies should attempt to further sort out the relation between fidelity aspects and outcome.

Conclusions

ACT model fidelity—specifically team structure—was associated with better outcomes. Several teams did not realize high fidelity and none of the teams achieved full ACT implementation. As this was a naturalistic study, we did not support the teams to reach high ACT fidelity. For the implementation of ACT it is important to have financial support, training and consultation, and fidelity monitoring. Effective leadership and an innovative culture are also crucial factors (64, 79). The results of our study showed that it may be worthwhile investing all of these efforts to achieve successful implementation.

3. Consumer-Providers in Assertive Community Treatment Programs: Associations With Client Outcomes

Van Vugt, MD, Kroon, H, Delespaul, PAEG, & Mulder, CL: Consumer- Providers in Assertive Community Treatment Programs: Associations With Client Outcomes. Psychiatric Services 63:477–481, 2012

Objective

This study examined whether employing mental health consumers as consumer-providers in assertive community treatment teams can enhance outcomes for clients with severe mental illness.

Methods

In a prospective longitudinal study, presence of consumer-providers and outcomes of 530 clients with severe mental illness in 20 outpatient teams were assessed at baseline and at one-year and two-year follow-ups. Measures included the Health of the Nation Outcome Scales (HoNOS), the Camberwell Assessment of Need Short Assessment Schedule (CANSAS), the Working Alliance Scale, the number of hospital days, and the number of days of homelessness. Multilevel regression was used with the in- dependent variables consumer-provider presence, time of measurement, and their interaction.

Results

A positive association was found between consumer-provider presence and improvements in functioning on the HoNOS (p=.020), met needs in relation to personal recovery (p=.044), unmet needs in relation to personal recovery (p=.008), and number of homeless days (p<.001). A negative association was found for consumer-provider presence and the number of hospital days (p=.019).

Conclusions

Consumer-providers are important participants in outpatient teams serving clients with severe mental illnesses, although integrating these providers as part of a team is a slow process.

Consumer participation in mental health care is a rising movement. In the past, self-help and mutual support developed as alternatives to traditional mental health services (80). The impact of these activities, however, was small. Recently, consumers increasingly have been hired by mental health care institutions in an effort to reach a broader range of clients (81). The underlying belief is that involving consumers improves the health and quality of life of clients (82). Consumer involvement can contribute to the development of a mental health care organization that is recovery oriented rather than delivery driven. Consumer-providers bring a different perspective on the mental health care process. Including experiential knowledge is an asset in care. The mere presence of consumer- providers is an example for clients and can give them hope (81, 83). Consumer-providers may also influence their nonconsumer team members by demonstrating that recovery is possible (84).

Recently, many Dutch mental health care organizations adopted the integration of consumers in mental health services. This is partly due to the expansion of assertive community treatment (ACT) teams in the Netherlands, because having a consumer as a member of the ACT team is part of the treatment model (35). However, consumer-providers are confronted with barriers and dilemmas, such as role confusion, not being taken seriously as a mental health professional, dissatisfaction with payment (81, 85), lack of counseling and supervision (86), paternalism, and stigma (87). There are also challenges at an organizational level, such as insufficient financial support for employment and caution by policy makers. Furthermore, policy makers and mental health system leaders have re- quested more outcome research (88). A number of studies of consumer- provided (intensive) case management and crisis services have demonstrated improved client outcomes compared with the outcomes of non- consumer-delivered services (47-49). Effects included a reduction in the use of hospital and crisis services (47), fewer hospital days (48), increased scores on measures of quality of life (89), and an increased number of days spent in stable housing (49). However, other studies found no differences in outcomes between teams with or without consumers (81,90–92). More research is needed to clarify the effects of consumer-providers on client outcomes. This study assessed the outcomes of clients of 20 outpatient teams with or without consumer-providers. The purpose of the study was to examine whether employing consumers of mental health services as consumer-providers in outpatient teams can enhance outcomes for clients with severe mental illness.

Methods

Design

This study is part of a Dutch national study on ACT fidelity and outcomes conducted from 2005 to 2008 (40). In this study, 20 outpatient teams located in different regions of the Netherlands and serving clients with severe mental illness participated. The teams made different choices for the implementation of outreach care for patients. Adherence to ACT fidelity criteria was not always the aim (40). Likewise, using a consumer to provide services was not always an aspiration of the mental health organizations.

Clients included in this study had to meet two of the following criteria: a period of homelessness during the past year, an average of six outpatient contacts per month during the past year, a Global Assessment of Functioning (GAF) score of 40 or less at the time of study entry, and having had two hospital admissions or having been in the hospital for 50 days in the past year. Possible GAF scores range from 0 to 100, with higher scores indicating better functioning. With these research inclusion criteria, we were able to analyze the most severely mentally ill clients, the population for whom ACT was originally developed.

Measures

The primary outcome measures in this study were as follows: level of functioning, met needs, unmet needs, working alliance, number of hospital days, and number of homeless days. Clients were followed up for 24 months, with data collection conducted at baseline, 12 months, and 24 months.

Demographic data were collected about age, gender, living situation, marital status, education, and ethnicity. Diagnosis was assessed by the psychiatrist on the team in accordance with DSM-IV (66). Mental and social functioning was measured by the Health of the Nation Outcome Scales (HoNOS) (67). Needs for care were measured with the Camberwell Assessment of Need Short Assessment Schedule (CANSAS) (68). Working alliance was measured with the Working Alliance Scale (69). Societal participation, including employment status, and use of mental health care were also assessed.

The HoNOS is a widely used and valid 12-item observer-rated measure intended to map a patient's mental state and functioning. Possible scores range from 0 to 48, with higher scores indicating worse psychiatric and social functioning. In our analysis, we used the mean total score of the 12 items, which expresses the total level of functioning. The CANSAS is a measure assessing the health and social needs of people with mental health problems. We used the rater- perspective version. Possible scores range from 0 to 25, with higher scores indicating more unmet needs. For this study, we added three items on the 22-item CANSAS: personal recovery, paid employment, and side effects of medication (93). In the analysis, we included the total unmet needs and the total met needs with respect to the 25 items. In addition, we analyzed the unmet needs and met needs, both coded 0, no, or 1, yes, on personal recovery. The Working Alliance Scale measures the relation between the client and the (most involved) care worker from the perspective of the care worker. Possible scores range from 7 to 35, with higher scores indicating a better working alliance. In our analysis, we used the mean total score of the seven items, reflecting the overall working alliance.

The outcome data were collected by trained mental health care workers. To optimize reliable measures, we gave a central training before the baseline assessments and booster sessions before the next follow-ups, one and two years later. We used the train-the-trainers method: the centrally trained care workers trained their team members at the sites.

Fidelity to the ACT model was assessed at baseline and at the two-year follow-up by independent raters with the Dartmouth Assertive Community Scale (DACTS), which was translated into Dutch (70).

The process of measuring ACT fidelity has been reported in more detail elsewhere (40). The DACTS consists of 28 items, each rated on a 5-point scale ranging from 1, not implemented, to 5, fully implemented. Item 28 rates the availability of consumer team members. At the two-year follow-up, team members were asked to complete item 28 about the availability of consumer-providers at the one-year follow-up. Thereby, we had information about the availability of consumer team members at three time points.

The study was approved by an independent medical ethical committee (Medisch Ethische Toetsingscommissie instellingen Geestelijke Gezondheidszorg), and no informed consent was required.

Statistical analysis

We performed all analyses using the statistical program Stata, version 11.1. Because the data consisted of multiple measurements clustered in subjects (clients) and teams, the data were analyzed with multilevel (three- level) regression (73). We used the Stata commands xtmixed (for linear multilevel regression) and xtmelogit (for logistic multilevel regression). The dependent variables in the regression models were the outcome variables of level of functioning (HoNOS total score); total unmet needs (proportion of unmet needs); total met needs (proportion of met needs); unmet needs and met needs specifically for personal recovery; working alliance (total score); the number of hospital days for psychiatric problems; and the number of homeless days.

For each parameter (dependent variable), we tested consumer presence (coded 0, no, or 1, yes), time of measurement (coded 0, 1, or 2), and the time × consumer presence inter- action, hereby correcting for age, ethnicity, gender, and the total fidelity score on the DACTS excluding the item about consumer participation in the team. We corrected for the total fidelity score, given that the correlation between consumer presence and the total fidelity score excluding item 28 was fairly high (r=.61). Random effects were modeled for the level parameters fixed for the independent variables. Our main hypothesis was reflected in a significant interaction term: the presence of a consumer-provider on a team yields more improvement over time.

Results

Baseline data

A total of 530 clients were included in the study (Table 1). After two years, we had collected outcome data for 321 (61%) of the clients. Twelve clients died—four as a result of suicide. Those who dropped out of the study (meaning that they were lost to follow-up because the mental health care workers were not able to collect the necessary data in due time) had significantly worse scores for the HoNOS total, unmet needs, and number of homeless days (40). Study dropout was not related to the presence of a consumer-provider.

Table 1 Demographic and illness characteristics of 530 clients in assertive community treatment, at baseline

Characteristic	N	%
Male	377	71
Age (M±SD)	41.6±11.3	15.1 (6.6)
Dutch	272	51
Married or living with a partner	42	8
Has a paying job	12	2
Homeless	69	13
Homeless in the past year	168	32
GAF symptoms (M±SD)[a]	38.6±14.9	
GAF disability (M±SD)[a]	36.0±11.8	
Diagnosis of schizophrenia	406	77
Addiction problem	286	54
Hospitalized in the previous year	242	46

[a] GAF, Global Assessment of Functioning Scale. Possible scores range from 1 to 100, with higher scores indicating better functioning.

At baseline, we found an association between presence of a consumer-provider and a number of severity-related problems. The presence of a consumer-provider was associated with worse baseline data on HoNOS total score (t=−3.12, df=517, p=.002), total unmet needs (t=−3.96, df=526, p<.001), and the number of homeless days (z=−8.14, p<.001, two- tailed, Mann-Whitney U test). How- ever, no associations were found on working alliance, total met needs, un- met needs for personal recovery, and met needs for personal recovery.

Model fidelity: consumer presence
Consumer presence was one of the worst-implemented elements of the ACT model in 2005; only four (20%) of the 20 teams had a consumer- provider. Five teams had the aim of employing a con- sumer within two years. More teams increased fidelity on item 28 over the research period and by 2007, seven teams (35%) had fulfilled the role of consumer- provider. One team, which did not originally have the ambition to employ a consumer, had one by 2007. The consumer-provider in one team had changed jobs and had not been replaced.

Multilevel regression analyses of outcomes

Analysis of HoNOS scores revealed a significant interaction between consumer presence and the time of measurement. Clients had better outcomes on the HoNOS when a consumer-provider was present than when teams were without a consumer-provider. The analyses showed that the same association was present for met and unmet needs related to personal recovery and for the number of homeless days (Table 2).

The finding for number of hospital days showed an inverse relation: Consumer presence was associated with an increased number of hospital days. There was no significant interaction effect between consumer presence and time of measurement with respect to CANSAS total met needs, CANSAS total unmet needs, and working alliance (Table 2).

Table 2 Associations between presence of a consumer-provider and time of measurement, by outcome

Outcome	β	Odds ratio	Z	95% CI	p
HoNOS total score[a]	**−.09**	**—**	**-2.33**	**−.16 to −.01**	**.020**
Total unmet needs[b]	.00	—	.05	−.02 to .02	.963
Total met needs[b]	.01	—	.71	−.01 to .03	.475
Homeless days	−36.60	—	−5.31	−50.11 to −23.08	<.001
Hospital days, psychiatric	15.04	—	2.34	2.46 to 27.61	.019
Working alliance[c]	.03	—	.54	−.08 to .14	.592
Unmet need, personal recovery[d]	—	.52	−2.65	.32 to .84	.008
Met need, personal recovery[d]	—	1.60	2.01	1.01 to 2.51	.044

[a] HoNOS, Health of the Nation Outcomes Scale

[b] Measured by the Camberwell Assessment of Need Short Assessment Schedule (CANSAS)

[c] Measured by the Working Alliance Scale

[d] Measured by a supplemental item on the CANSAS

Discussion

This study found that hiring consumer-providers in outpatient teams was associated with client outcomes. Specifically, we found an association between consumer presence and improvements on HoNOS total scores, number of homeless days, and met and unmet needs with respect to the specific item of personal recovery. We also found an association between consumer presence and an increased number of hospital days.

Previous research demonstrated an association between the addition of consumer-providers and a reduction in the use of hospital and crisis services (47), fewer hospital days (48), an increased number of days spent in stable housing (49), and increased quality of life scores (89). With the exception of quality of life, which was not assessed by this study, the results of the present study are partly in agreement with former research. We found a reduction in number of homeless days but no reduction of hospital days. The opposite association between consumer presence and the number of hospital days seemed initially counterintuitive. An explanation might be that consumer- providers heightened the attention to the clients' suffering and advocated for an intervention. It is possible that there was an association with the improvement in functioning and the increased hospital days.

Our results on level of functioning and met and unmet needs in relation to personal recovery are an addition to the studies mentioned. Given their personal experience of recovery, it is not surprising that consumer-providers can play a positive role in their clients' acceptance of their illness and recovery processes. Therefore, our results were in agreement with the specific power ascribed to consumer- providers.

Our data showed that employing a consumer in an outpatient team is innovative and not very common. At the start of the study, in 2005, only 20% of the teams had a consumer as team member. At that time, teams with a consumer-provider were pioneers in Dutch mental health. The growing interest in the use of the ACT model, which promulgates including a consumer on a team, was probably a moderating factor in employing consumers. Another impetus for hiring consumer-providers is an increasing focus on recovery and rehabilitation. Consumers can play an important role in this process. During our research, the number of consumers in the outpatient teams increased, al- though by the end of the study, only 35% of the teams had hired a consumer. This shows that the employment of consumers requires attention and should be prioritized.

A strength of the present study was its longitudinal character and large number of teams. This was the first study of consumer-providers and out- comes with a large number of teams, a broad set of outcome measurements, and a correction for the nested data by using the multilevel regression technique. The study was limited because the client data were collected by trained mental health care workers, whereby the client view was missing. Another limitation was that we did not have interrater reliability data.

Our naturalistic study does not allow us to clarify which processes were responsible for the re- sults. One can imagine that the actions of the consumer-provider could have directly helped clients

or had a positive influence on the attitude and treatment processes of the whole team. However, it is possible that the teams that hired consumer-providers were more recovery oriented and provided more effective care. The results may be a combination of these factors. Moreover, it is plausible that working according to a specific model—the ACT model—played a part in the results, as it brings harmony, enthusiasm, spirit, and intelligibility into a team. The correlation between consumer presence and overall fidelity to the ACT model was fairly high (r=.61). Therefore, we corrected for this and hope to have covered this possible bias.

At baseline, teams with a consumer-provider treated more severely ill clients. It may be that the clients of teams without a consumer-provider improved less because they were less sick and had less room to improve (a floor effect). It is important to note that the multilevel analysis modeled with random effects for the nested individuals and teams and controlled for the differences in baseline scores between teams. Moreover, we found an association at both follow-ups be- tween consumer fidelity and unmet and met needs in relation to personal recovery, whereas there was no significant difference at baseline.

Conclusions

This study supports the management decision to add a consumer-provider to an outpatient team. We found an association between consumer presence and improvements on HoNOS, met and unmet needs in relation to personal recovery, and number of homeless days. The study also showed that integrating consumer-providers in health care is a slow process.

4. Assertive Community Treatment and Associations with Substance Abuse Problems

Abstract

This study examined the associations between substance abuse problems in severely mentally ill patients, outcome and Assertive Community Treatment (ACT) model fidelity. In a prospective longitudinal study, ACT model fidelity and patient outcomes were assessed in 20 outpatient treatment teams using the Health of the Nation Outcome Scales, Camberwell Assessment of Needs short appraisal schedule and measures of service use. Five hundred and thirty severely mentally ill patients participated in the study. Substance abuse problems were assessed three times during a 2-year follow-up period. This study found that among patients with severe mental illness, patients with an addiction problem had more serious psychosocial problems at baseline. Substance abuse problems showed improvement over time, but this was not associated with ACT model fidelity. The study indicates that investment by teams to improve a patient's psychosocial situation can lead to improvements on substance problems.

Introduction

Patients with severe mental illness (SMI) are more likely to have substance abuse disorders than the general population, with lifetime rates of substance abuse disorders of approximately 50% (94, 95) and rates of current substance abuse disorders of approximately 30% (96). For SMI patients, substance abuse disorders are associated with a variety of negative outcomes, including increased risk of relapses and rehospitalizations (50), homelessness (51), violence (52) and higher use of services (53). The high rate of substance abuse and dependence, and its effects on the course of psychiatric illness has made the identification and treatment of these individuals a high priority. Since the 1980s, clinicians and researchers have been aware of the ineffectiveness of treating mental health and substance abuse disorders with parallel and sequential treatments in separate systems (25, 97, 98). Integrated models of treatment emphasize the importance of treating both the mental illness and the substance abuse disorder at the same time by the same clinician or team. A central remaining question concerns how integrated treatment for co-occuring disorders should be provided (25). With the philosophy of integrated care, the Assertive Community Treatment (ACT) model seems an obvious option. As the ACT model has been developed as part of a study of dual diagnosis ACT teams, there is relatively much attention to substance abuse treatment. Four of the 28 items of the Dartmouth ACT model fidelity scale (DACTS; 34, 35) are related to substance abuse treatment. It corresponds to the efforts of ACT teams to deliver treatment as integrated as possible.

Patients with co-occuring substance abuse disorders tend to hospitalize more frequently (99, 100) and treating co-occuring disorders is associated with higher costs (53, 101). ACT has been found to reduce hospitalizations (12) and treatment costs for high service users (38). Only two controlled studies, from Essock et al. (25) and Drake et al. (22) have specifically compared ACT and standard clinical case management for delivering integrated dual diagnosis treatment. The first study found that participants in both treatment conditions improved over time in multiple outcome domains, including substance use, and few differences were found between the two models. The second study found that patients in both groups improved on substance abuse, mental health and housing outcomes and that ACT demonstrated statistically significant but clinically modest benefits over standard clinical case management on alcohol abuse outcomes. Furthermore, patients at sites that followed the ACT model faithfully had much better outcomes on sub- stance abuse than patients at sites with lower fidelity to the treatment model (37). More research on this issue is needed, moreover research outside the US is necessary.

This study attempts to answer the following questions:

1. Can we confirm differences in psychosocial problems between SMI patients with and without addiction problems?
2. Is there an improvement of substance abuse problems over time?
3. Is ACT model fidelity associated with improvements in substance abuse problems?
4. Is the level of other psychosocial problems associated with improvements in substance abuse problems?

Materials and Methods

Design

This study is part of a Dutch national study on ACT fidelity and outcomes, conducted from 2005 to 2008 (40). In this study 20 outpatient teams serving SMI patients participated, located in different regions of the Netherlands. The teams in this study made different choices for the implementation of outreaching care for patients with SMI. Adherence to ACT fidelity criteria was not always the aim (40).

Patients included in this study had to meet two of the following criteria: a period of homelessness during the past year; an average of 6 outpatient contacts per month during the past year; a global assessment of functioning score of 40 or less at time of study entry; 2 admissions or 50 hospital days in the past year. With these research inclusion criteria, we were able to analyse the most severely mentally ill patients.

Measures

Data were collected on: demographics (including age, gender, living area, marital status, educational history and ethnicity), diagnoses (Diagnostic and Statistical Manual of Mental Disorders IV, DSM IV, as assessed by the psychiatrist of the team) (66), mental and social functioning (Health of the Nation Outcome Scales, HoNOS) (67), needs for care [Camberwell Assessments of Need Short Assessment Schedule, (CANSAS)] (68) employment status, use of mental health care (including hospitalization for psychiatric problems and hospitalization for substance abuse problems) and the number of days in detention. Addiction problems at baseline were measured by CANSAS item 12 (alcohol) and item 13 (drugs). An unmet or met need on one or both items of the CANSAS meant an addiction problem (coded as 1); no need on both items meant no addiction problem (coded as 0).

The HoNOS is a widely used and valid 12-item observer- rated measure intended to map a patient's mental state and functioning. In our analysis we used the mean total score (excluding the item about addiction problems) and HoNOS item 3 which measures the presence and severity of addiction problems. The CANSAS is a measure assessing the health and social needs of people with mental health problems. We used the rater-perspective version. For this study we added 3 items on the 22-item CANSAS, including personal recovery, paid employment and side effects of medication

(93). In the analysis we included the total unmet needs and the total met needs, excluding the items about alcohol and drugs (item 12 and 13).

The outcome measures were the following substance abuse outcomes: (having an) addiction problem and the number of hospital days for addiction problems. Addiction problems were measured by HoNOS item 3 (0 means no problem, 4 means a very serious problem).

Patients were followed up to 24 months, with data col- lection at baseline (T0), 12 months (T1) and 24 months (T2). All outcome data were collected by trained mental health care workers. To optimise the scoring procedures and reliability of the measures a central training was given before the T0 assessments; booster sessions were given 1 year later (before the T1) and after 2 years (before the T2). We used the train-the-trainers method: the centrally trained care workers trained their team-members at the sites.

In the national study, fidelity to the ACT-model was assessed at baseline and after 2 years by independent raters with the Dartmouth Assertive Community Scale, (DACTS) which was translated into Dutch (70). The process of measuring ACT fidelity have been reported in more detail elsewhere (40). The DACTS consists of 28 items, each rated on a 5-point scale (1 means not implemented, 5 means fully implemented). The four items which are related to substance abuse treatment are: substance abuse specialist on staff (item 9) individualized substance abuse treatment (item 25), Dual Disorder Treatment Groups (item 26) and implementation of the Dual Disorders treatment Model (item 27).

The study was approved by an independent medical ethical committee [Medisch Ethische Toetsingscommissie instellingen Geestelijke Gezondheidszorg (METiGG)], no informed consent was required, since we only used observational instruments and data were collected as part of a Routine Outcome Monitoring procedure.

Statistical Analyses

All analyses were performed using the statistical program Stata version 11.1. To answer the first question, the sample at baseline was divided in two groups: patients with an addiction problem (coded as 1) and patients without an addiction problem (coded as 0). Bivariate analyses were used to compare baseline characteristics across the two groups by using t tests for continuous data, and Pearson's Chi square tests for categorical data.

To answer the second question, the data were analyzed with (3-level) multilevel regression since the data consisted of multiple measurements clustered in subjects (patients) and teams (73). We used the Stata command xtmixed for linear multilevel regression. The dependent variables in the regression models were the substance abuse outcome variables: addiction problem (HoNOS item 3) and the number of hospital days for substance abuse problems. For these dependent variables we tested time (coded as 0, 1, 2), hereby correcting for potentially confounding characteristics: age, gender and ethnicity.

For the third question, we used a multilevel regression model with the similar dependent variables: addiction problem (HoNOS item 3) and the number of hospital days for substance abuse problems. To answer the third question, we tested for these dependent variables time, DACTS total fidelity and the interaction between time and DACTS, hereby correcting for potentially confounding characteristics (age, gender and ethnicity). Random effects were modeled for the level parameters fixed for the independent variables. Additionally, we repeated this analyse with the mean score of the four DACTS items which are related to substance abuse treatment ('DACTS substance abuse treatment fidelity') instead of the total DACTS fidelity score.

For the fourth question, a similar multilevel regression model was used as described for our third question. Psychosocial problems were defined by HoNOS total score (excluding the addiction item) and a period of homelessness in the past year (no coded as 0, yes coded as 1). To answer the fourth question, we tested time, HoNOS total score and the interaction between time and HoNOS total score, hereby correcting for potentially confounding characteristics (age, gender and ethnicity). Next, we tested homelessness and the interaction between time and homelessness, hereby correcting for potentially confounding characteristics (age, gender and ethnicity).

Results

Baseline Associations

Five hundred and thirty patients were included in the study. The mean age of the patients was 42 (SD 11.3). Patients were most frequently male (71%). A majority had a diagnosis of schizophrenia (77%). Almost half of the sample had been hospitalized in the past year (46 %). After 2 years we had outcome data of 61% of the patients. Twelve patients died-four as a result of suicide (40).

Addiction problems at baseline, defined as an unmet or/ and met need with respect to alcohol or drugs, were known for 519 patients; of whom 278 (54%) had an unmet or/and met need. Of these 278 patients with an addiction problem, 127 patients had primarily drug problems, 57 patients had primarily alcohol problems and 94 patients had both alcohol and drugs problems.

The group with an addiction problem represented significantly more men and their average age was significantly lower. No differences between the two groups were found with respect to living area, highest completed education, ethnicity and employment status (Table 1).

At baseline we found an association between addiction problems and severity of psychosocial problems. Patients with addiction problems had worse baseline scores on HoNOS total (excluding the addiction item) more unmet and met needs (excluding the two addiction items) (independent samples t test: t = -6.34, df = 509, p < 0.001; t = -5.07, df = 517, p < 0.001, t = -5.70, df = 517, p < 0.001, respectively) and were more frequently home- less, hospitalized due to psychiatric problems, hospitalized due to substance abuse problems, and imprisoned in the past year (Pearson's Chi squared test: $\chi^2(1) = 11.4$, p=0.001; $\chi2(1)=5.0$, p=0.026; $\chi2(1)=29.5$, p<0.001; $\chi2(1)=16.8$, p<0.001, respectively).

Table 1 Characteristics of patients with and without addiction problems at baseline

Characteristic	Addiction problems?		Test statistic (df)	p
	No	Yes		
	N (%)	N (%)		
Gender			$\chi^2(1)=41.9$	p<0.001
Male	138 (57.3)	231 (83.1)		
Female	103 (42.7)	47 (16.9)		
Ethnicity			$\chi^2(1)=1.3$	p=0.26
Dutch	118 (48.4)	150 (54.0)		
Other	123 (51.0)	128 (46.0)		
Age (M±SD)	44.9 ±.12.0	39.0 ±10.0	t(517)=6.1	p<0.001
Highest education			$\chi^2(3)=5.2$	p=0.16
No/elementary school	60 (32.6)	88 (40.4)		
Primary education	76 (41.3)	92 (42.2)		
Secondary education	36 (19.6)	28 (12.8)		
Higher education	12 (6.5)	10 (4.6)		
Living area			$\chi^2(1)=1.4$	p=0.23
Urban	120 (49.8)	153 (55.0)		
Rural	121 (50.2)	125 (45.0)		
Employment status			$\chi^2(1)=1.3$	p=0.25
No work	219 (90.9)	264 (95.0)		
Work[b]	22 (9.1)	14 (5.0)		

[a] Addiction problems at baseline were measured by CANSAS item 12 (alcohol) and item 13 (drugs). An unmet or met need on one or both items of the CANSAS meant an addiction problem (coded as 1); no need on both items meant no addiction problem (coded as 0).

[b] Including (un)paid jobs.

Model Fidelity

The twenty teams varied from low (2.8) to high (4.1) total DACTS fidelity at baseline (mean 3.3, SD 0.4). Two years (T2) later the total DACTS scores were similar (range 2.7–4.0; mean 3.3, SD 0.3).

The substance abuse treatment related items (substance abuse specialist on staff, individualized substance abuse treatment, Dual Disorder Treatment Groups and implementation of the Dual Disorders treatment Model DACTS items 9, 25, 26 and 27) belonged to the worst implemented items of the DACTS, with a mean of 1.9 (range 1.0–2.8; SD 0.5) in 2005 and a mean of 2.1 (range 1.3–3.3; SD 0.6) in 2007.

The correlation between the total DACTS score and the DACTS substance abuse treatment score was 0.4 at base- line and 0.5 two years later.

The correlation between DACTS fidelity and an having addiction problem at baseline was very low (<0.1); also, the correlation between the substance abuse treatment related items and addiction problems at baseline was low (<0.2).

Outcomes Over Time

The multilevel analyses showed significant improvement over time with respect to addiction problems and the number of hospital days for addiction problems (b = -0.07, z =-2.21, CI -0.12 to -0.01, p = 0.027; b = -0.02, z =-2.65, CI -0.04 to -0.01, p = 0.008, respectively).

Associations Between ACT Model Fidelity and Substance Abuse Outcomes

The analyses showed no associations between DACTS total fidelity and improvements over time on addiction problems or hospital days for substance abuse problems (b = -0.15, z = -1.48, CI -0.36 to 0.05, p = 0.140; b = 0.01, z = 0.42, CI -0.04 to 0.06, p = 0.676, respectively). Also, no associations were found between DACTS substance abuse treatment fidelity and improvements on the two substance abuse outcomes (b = -0.04, z = -0.61, CI -0.17 to 0.09, p = 0.540; b = -0.03, z = -1.60, CI -0.06 to 0.01, p = 0.110.

Associations Between Psychosocial Characteristics and Substance Abuse Problems

The analyses showed a significant interaction between homelessness and time when analyzing addiction problems and the number of hospital days for substance abuse problems, meaning that patients with a period of homelessness showed less improvement over time than patients without a period of homelessness (b = 0.31, z = 3.07, CI 0.11–0.50, p = 0.002; b = 0.06, z = 2.39, CI 0.01–0.10, p = 0.017, respectively). Also, significant interactions were found between HoNOS total score (excluding the addiction item) and the two substance abuse outcomes (b = 0.47, z = 6.42, CI 0.33–0.61, p \ 0.001; b = 0.05, z = 2.79, CI 0.01–0.08, p = 0.005) meaning that patients with worse scores on HoNOS total showed less improvement over time.

Discussion

In this study, baseline characteristics between patients with and without an addiction problem were analyzed. Patients with an addiction problem at baseline, 54% of the sample, did have worse scores on several outcome measures at baseline. This is in agreement with other studies (50-53).

Further, substance abuse outcomes over time were analyzed. The study showed that the outcome addiction problem significantly improved over time and the number of days spent in the hospital for substance abuse problems decreased significantly over time. This is also in agreement with other studies (25, 35).

Both DACTS total fidelity as DACTS substance abuse treatment fidelity showed no associations with these improvements. Drake et al. (35) did find an association between ACT fidelity and better substance abuse outcomes. It should be noted that the statistical analyses used by Drake et al. are not comparable with our analyses. Beyond that, an explanation for the difference in outcomes between our study and the study of Drake et al. may be the differences in implementation between the ACT model and, more specifically, the model fidelity items related to the implementation of substance abuse treatment. In the US study, a higher percentage of teams reached high ACT fidelity compared to our study. Also, in our national study, the four DACTS items related to substance abuse treatment belonged to the worst implemented DACTS items. More- over, in the Drake et al. study, the associations between changes in substance abuse problems and DACTS substance abuse treatment fidelity items were not analyzed separately. It may be that the outcomes with respect to substance abuse problems improve when ACT implement interventions to treat substance abuse problems.

Patients with more psychosocial problems showed less improvement over time for both substance abuse outcomes. This indicates that investment by teams to improve a patient's psychosocial situation, like housing and psychiatric functioning, can eventually lead to improvements on substance abuse outcomes. However, with the design of this study we can only assume associations and not causal relations.

The strength of our study is its longitudinal design, the large number of teams and the use of state-of the-art statistical techniques correcting for the nested data. The study complements the two US studies about ACT fidelity and substance abuse outcomes. This is the first study which used the four substance abuse items of the ACT model fidelity scale in relation to substance abuse outcomes.

A limitation of the study is the lack of an adequate substance abuse measurement, like the Addiction Severity Index (ASI; 102).

Substance abuse treatment was not seriously developed in any of the teams, a serious weakness in this study. The low scores and small range between the teams for the DACTS substance abuse treatment fidelity makes it difficult to interpret the results. It is unclear if higher scores or more contrast between the teams would have resulted in different outcomes. Thereby, the small range has mathematical consequences which made it difficult to reach significance. The poor implementation of substance abuse treatment in the 20 teams shows that, at the time of this study, integrated dual

diagnosis treatment was not a high priority of the management. Mental health care and addiction care are traditionally separate worlds, but in recent years there has been an increasing focus on Dual Diagnosis in the Dutch mental health care. The ACT model, with emphasis on integrated dual diagnosis treatment, has contributed to this change.

In contrast with for the range the DACTS substance abuse treatment fidelity, the range for the total model fidelity was considerable enough to conclude that ACT model fidelity is not associated with changes in substance abuse outcomes. Recent studies have shown that the following psychosocial interventions on substance abuse and psychiatric problems are recommended for patients with co-occuring substance abuse disorders: motivational inter- viewing, cognitive behavioral therapy, contingency management and group therapy (103, 104). In this perspective, the ACT model fidelity scale is limited and not attributed to these findings.

Given our results on substance abuse outcomes, it is recommendable for teams to implement psychosocial interventions and improve a patient's psychosocial situation.

5. Assertive Community Treatment and associations with delinquency

Abstract

This article draws on a prospective longitudinal study in which Assertive Community Treatment (ACT) model fidelity and patient outcomes were assessed in twenty outpatient treatment teams. 530 severely mentally ill patients participated in the study. Delinquency outcomes were assessed three times during a two-year follow-up period.

At baseline, 49 percent of the patients had a recent criminal history, meaning that they had at least one reported contact with the police and/or the justice system in the past year. Patients with a recent criminal history had more serious psychosocial problems at baseline compared to those without a recent criminal history. Delinquency outcomes showed improvement over time, but this was not associated with ACT model fidelity. The study shows an association for homelessness and criminal activity. The persistent criminal activities of some of the patients showed that for this group extra interventions are needed that specifically target reduction of criminal behavior.

Introduction

Patients with severe mental illness (SMI) frequently have contact with the justice system (54). There may be several reasons for this association. First, a large proportion of people with severe mental illness has besides their psychiatric problems, additional problems including substance abuse or dependence, social and behavioral problems (105). Second, people with SMI belong to the poorest citizens of a country (106), which forces them to live in depleted neighborhoods, housing projects or homeless shelters. These are environments where the concentration of other marginalized citizens, unemployment, crime, victimization and family breakdown are widespread (107, 108). US- statistics show that as a group, persons with severe mental illness are jailed more often than hospitalized (54). In a large US-study, persons displaying symptoms characteristic of mental illness were found to have a 67 percent higher probability of being arrested than persons without mental problems (109, 110).

Long term outcomes of patients with a criminal history

Previous studies have shown that SMI patients with a criminal history have poorer baseline and long term outcomes than SMI patients without a criminal history (54-56). McGuire & Rosenheck (55) found that among homeless patients with SMI, patients with a long term history of incarceration had more serious psychiatric and substance abuse problems than those with a short term incarceration history or those without a history of incarceration. Patients with a incarceration history showed poorer psychiatric 12-months outcomes than those with no history of incarceration. Fakhoury et al. (56) found that among SMI patients with substance abuse, those who suffer from social exclusion and forensic problems had poorer outcomes than the rest of the patients in terms of (compulsory) hospitalization. In the study of Morrisey et al. (54) higher rates of substance abuse and homelessness were found for SMI patients with a recent criminal history compared to patients without a recent criminal history.

Assertive Community Treatment for patients with severe mental illness

Assertive Community Treatment (ACT) is an evidence-based model for providing services to SMI patients with many hospitalizations and treatment failures. ACT was developed in the 1970s as a community alternative to psychiatric hospitalization (1) and has been disseminated across the US and several other Western countries. A large proportion of the patient population of ACT teams consists of people with psychotic disorders and several other problems, such as substance abuse, homelessness, debts, unemployment, crime and victimization. ACT combines treatment, rehabilitation, and support services in a multidisciplinary team made up of a mix of disciplines including psychiatry, nursing, addiction counseling, and vocational rehabilitation. Key principles of ACT are: integration of services, low patient-staff ration, locus of contact in the community, medication management, focus on everyday problems in living, assertive outreach, and time unlimited services.

ACT is a widely studied model and has been found to produce better hospitalization and housing outcomes than other treatments (2). ACT model fidelity can be measured using the 28-item DACTS (34, 35). Studies have shown that ACT model fidelity is associated with better outcomes for patients (36, 37, 40).

Assertive Community Treatment and criminal outcomes
Unfortunately, ACT has not proven to be more effective than other treatments in reducing criminal justice contacts (2, 57). A review of Bond et al. (2) in which twenty-five randomized controlled trials (RCTs) were included, examined the evidence regarding the effectiveness and cost effectiveness of ACT. Ten of these RCTs included delinquency outcomes, such as the number of arrests and detention time. Seven studies found no difference in effects on delinquency outcomes between ACT and the control group, two studies were in favor of ACT and one in favor of the control group. Calsyn et al. (57) described a randomized controlled trial of homeless patients with dual disorders who were assigned to ACT, care as usual (CAU) or integrated treatment (IT). ACT was not more effective in reducing criminal behavior than CAU or IT. Patients in ACT and IT did show better outcomes on hospitalization, housing, mental health and drug use than CAU. These positive outcomes showed no correlation with the delinquency outcomes. Earlier criminal behavior was the strongest indicator for several delinquency outcomes, such as arrests and indictments. Calsyn and colleagues therefore concluded that the benefits of ACT do not automatically transfer to criminal behavior. A small study (111) showed that Assertive Community Treatment (ACT) combined with Integrated Dual Diagnosis Treatment (IDDT) was associated with a decrease in nuisance acts and crime convictions in dual-diagnosis repeated offenders. The decrease in nuisance acts was associated with a decrease in substance abuse. Beach et al. (112) found in a large study among ACT programs that patients with a recent forensic history had more frequently a recent history of homelessness. Further, the study showed that substance abuse and homelessness were associated with increased recidivism and homelessness at follow-up.

Research questions
The results of the previous studies indicate a difficult interplay between mental illness, substance abuse, social exclusion, homelessness and delinquency. In the present study the following questions were examined:
1. Can we confirm differences in the level of psychosocial problems between SMI patients with and without a recent criminal history?
2. Is there an improvement of delinquency outcomes over time?
3. Is ACT model fidelity associated with improvements on delinquency outcomes?
4. Is the level of psychosocial problems associated with improvements on delinquency outcomes?

Methods

Design

This study was part of a Dutch national study on the association between ACT fidelity and outcomes, conducted from 2005-2008 (40). In this study twenty outpatient teams serving SMI patients participated, located in different regions of the Netherlands. The teams in this study made different choices for the implementation of outreaching care for patients with severe mental illness. Adherence to ACT fidelity criteria was not always the aim (40). All teams can be characterized as regular outpatient teams for SMI patients, which means that no special attention was paid to forensic issues.

Patients included in this study had to meet two of the following criteria: a period of homelessness during the past year; an average of six outpatient contacts per month during the past year; a Global Assessment of Functioning score of forty or less at time of study entry; two admissions or fifty hospital days in the past year. With these research inclusion criteria, we were able to analyze the most severely mentally ill patients.

Measures

Patient outcomes

The outcome measures were the following delinquency outcomes: contact with the police and/or justice system (yes coded as 1, no coded as 0), and the number of days in detention. Contact with the police and/or justice system was determined by one (or more) reported contact(s) with the police or/and the justice system, including patients who are serving a sentence.

Data were collected on: demographics (including age, gender, living area, marital status, educational history and ethnicity), diagnosis (Diagnostic and Statistical Manual of Mental Disorders IV, DSM IV, as assessed by the psychiatrist of the team) (66), mental and social functioning (Health of the Nation Outcome Scales, HoNOS) (67), needs for care (Camberwell Assessments of Need Short Assessment Schedule, CANSAS) (68), employment status, use of mental health care (including hospitalization for psychiatric problems and hospitalization for substance abuse problems), reported contacts with police or/and the justice system, and the number of days in detention.

The HoNOS is a widely used and valid 12-item observer-rated measure intended to map a patient's mental state and functioning. In our analysis we used the mean total score of the 12 items, which expresses the total level of functioning and HoNOS item 3, which measures the presence and severity of addiction problems. The CANSAS is a measure assessing the health and social needs of people with mental health problems. We used the rater-perspective version. For this study we added 3 items on the 22-item CANSAS, including personal recovery, paid employment and side effects of medication (93). In the analysis we included the total unmet needs and the total met needs with respect to the 25 items.

Patients were followed up to twenty-four months, with data collection at baseline (T0), twelve months (T1) and twenty-four months (T2). All outcome data were collected by trained mental health care workers. To optimize reliable measures a central training was given before the T0 assessments; booster sessions were given one year later (before the T1) and after two years (before the T2). We used the train-the-trainers method: the centrally trained care workers trained their team-members at the sites.

Team outcome: ACT model fidelity
In this study, fidelity to the ACT-model was assessed at baseline and after two years by independent raters with the Dartmouth Assertive Community Scale (DACTS), which was translated into Dutch (70). The process of measuring ACT fidelity has been reported in more detail elsewhere (40). The DACTS consists of 28 items, each rated on a 5-point scale (1 means not implemented, 5 means fully implemented).

Calculation

All analyses were performed using the statistical program Stata version 11.1. To answer the first question, recent criminal history at baseline, as measured by reported contact(s) with police or/ and the justice system in the past year (including patients who were serving a sentence in the past year), was used to divide the sample at baseline in two groups: patients who had no recent criminal history (coded as 0) versus those who had a recent criminal history (one contact or more in the past year, coded as 1). Bivariate analyses were used to compare baseline characteristics across the two groups by using t-tests (or the non-parametic Mann Whitney U) for continuous data, and chi-square tests for categorical data.

To answer our second question, the data were analyzed with (three-level) multilevel regression since the data consisted of multiple measurements clustered in subjects (patients) and teams (73). We used the Stata commands xtmixed (for linear multilevel regression) and xtmelogit (for logistic multilevel regression). The dependent variables in this regression model were the delinquency outcome variables: contact with the police and/or justice system in the past year (yes coded as 1, no coded as 0), and the number of days in detention. For each dependent variable we tested time (coded as 0, 1, 2), hereby correcting for potentially confounding baseline characteristics: age, ethnicity, gender, employment status and living area (urban or rural).

For the third question, we used a multilevel regression model with the similar dependent variables: contact with the police and/or justice system in the past year and the number of days in detention. To answer the third question, we tested for these dependent variables time, DACTS total fidelity and the interaction between time and DACTS, hereby correcting for potentially confounding characteristics (age, ethnicity, gender, employment status and living area). Random effects were modeled for the level parameters fixed for the independent variables.

For the fourth question, a similar multilevel regression model was used as described for our third question. Psychosocial problems were defined by HoNOS total score, HoNOS item 3 (which measures the presence and severity of addiction problems) and a period of homelessness in the past year (no coded as 0, yes coded as 1). To answer the fourth question, we tested time, HoNOS total score and the interaction between time and HoNOS total score, hereby correcting for potentially confounding characteristics (age, ethnicity, gender, employment status and living area). Next, we tested level of addiction (HoNOS item 3) and the interaction between time and level of addiction, hereby correcting for potentially confounding characteristics (age, ethnicity, gender, employment status and living area). Finally, we tested homelessness and the interaction between time and homelessness, hereby correcting for potentially confounding characteristics (age, ethnicity, gender, employment status and living area).

Results

Baseline associations

530 patients were included in the study. The mean age of the patients was 42 (SD 11.3). Patients were most frequently male (71%). A majority had a diagnosis of schizophrenia (77%). Almost half of the sample had been hospitalized in the past year (46%). After two years we had outcome data of 61% the patients. Twelve patients died, four as a result of suicide (40).

Recent criminal history at baseline was known from 526 patients, of whom 258 (49 percent) had one or more reported contact(s) with the police or justice system. 32% of the patients with a recent criminal history at baseline had spent one or more days in detention. None of the patients had spent the whole research period in detention. The group with a recent criminal history represented significantly more men, immigrants, patients without a job and patients who live in the city. The average age of the patients with a recent criminal history was significantly younger. No difference between the two groups was found on highest completed education (table 1).

Table 1 Baseline characteristics of patients, by recent criminal history

Characteristic	Recent criminal history?		Test statistic (df)	p
	No	Yes		
	N (%)	N (%)		
Gender			$\chi^2(1)=19.6$	p<0.001
Male	167 (62.3)	206 (79.8)		
Female	101 (37.7)	52 (20.2)		
Ethnicity			$\chi^2(1)=16.7$	p<0.001
Dutch	161 (60.1)	109 (42.3)		
Other	107 (39.9)	149 (57.8)		
Age (M±SD)	43.1 ±12.1	40.0 ±10.1	t(524)=3.1	p=0.001
Highest education			$\chi^2(3)=3.4$	p=0.330
No/elementary school	66 (32.4)	82 (40.4)		
Primary education	90 (44.1)	81 (39.9)		
Secondary education	34 (16.7)	31 (15.3)		
Higher education	14 (6.9)	9 (4.4)		
Living area			$\chi^2(1)=35.5$	p<0.001
Urban	106 (39.6)	169 (65.5)		
Rural	162 (60.5)	89 (34.5)		
Homeless in past year			$\chi^2(1)=96.9$	p<0.001
No	235 (88.0)	124 (48.1)		
Yes	32 (12.0)	134 (51.9)		
Employment status			$\chi^2(1)=4.4$	p=0.036
No work	243 (90.7)	246 (95.4)		
Work[a]	25 (9.3)	12 (4.7)		

[a] Including (un)paid jobs.

At baseline we found an association between recent criminal history and severity of psychiatric and social problems. Patients with a recent criminal history had worse baseline total scores on HoNOS, unmet needs, met needs (t (514)=-7.3, p<0.001; t (523)=-7.3, p<.001; t (523)=2.0, p=0.043, respectively with independent samples t-test 95% CI), number of homeless days, number of hospital days for psychiatric problems, and number of hospital days for substance abuse problems (z=-9.5, p<0.001; z=-4.7, p<0.001; z=-3.5, p<0.001 with two sample Mann Whitney U Test). Specifically, the number of hospital days for the group without a recent criminal history was 33 (SD=73.8) versus 52 (SD=77.3) for the group with a recent criminal history. The number of homeless days was 32 (SD=95.7) for the group without a recent criminal history versus 126 (SD=155.3) for the group with a recent criminal history.

Model fidelity
The DACTS scores of the twenty teams varied from low (2.8) to high (4.1) fidelity at baseline (mean 3.3, SD 0.4). Two years (T2) later the DACTS scores were similar (range 2.7-4.0; mean 3.3, SD 0.3) (40). At baseline, the correlation between DACTS fidelity and recent criminal history was very low (rho< -0.01).

Outcomes over time
The analyses showed a significant improvement of the outcome variable contact with the police and/ or justice system (OR=0.5, z=-6.4, CI 0.4 to 0.6, p<0.001). The number of days in detention showed a decrease over time, but this was not significant (β=-1.1, z=-0.9, CI -3.4 to 1.3, p=0.4).

Associations between ACT fidelity and delinquency outcomes
The analyses showed no associations between DACTS total fidelity and improvements over time on contact with the police and/or justice system or the number of days in detention (OR=1.33, z=0.67, CI=0.58 to 3.10, p=0.501; β=1.68, z=0.45, CI -5.68 to 9.03, p=0.66, respectively).

Associations between psychosocial characteristics and delinquency outcomes
The analyses showed a significant interaction between homelessness and time when analyzing contact with the police and/or justice system, meaning that patients with a period of homelessness showed less improvement over time on this outcome than patients without a period of homelessness (OR=2.19, z=2.41, CI 1.58 to 4.15, p=0.016). No significant interaction was found for the number of days in detention (β=4.00, z=1.24, CI -2.33 to 10.33, p=0.215).

Also, no significant interactions were found between HoNOS total score and the two delinquency outcomes (OR=1.38, z=1.23, CI 0.83 to 2.29, p=0.217 , β=-0.86, z=-0.39, CI -5.20 to 3.48, p=0.697, respectively), nor between level of addiction and the two delinquency outcomes (OR=1.04, z=0.33, CI 0.84 to 1.27, p=0.744 , β=-1.20, z=-1.33, CI -2.97 to 0.06, p=0.185, respectively).

Discussion

Assertive Community Treatment and criminal outcomes

In this study, baseline characteristics between patients with and without a recent criminal history were analyzed. Patients with a recent criminal history at baseline, 49 percent of the sample, had worse scores on almost all outcome measures at baseline. This is in agreement with other studies (55, 56, 112).

Further, delinquency outcomes over time were analyzed. The outcome variable contact with police or/and justice system showed significant improvement over time. Also, the number of days in detention decreased, but this was not significant.

ACT model fidelity was not associated with improvements on the delinquency outcomes. This is also in agreement with previous research (2, 57).

Associations with psychosocial problems

The analysis with the level of other psychosocial problems showed an association between homelessness and delinquency over time, but no association was found for total level of functioning. Also, no association was found for the level of addiction problems, while in other studies substance abuse was identified as (one of the) risk factor(s) for forensic problems at follow-up (111, 112). In this study, living on the streets seems to be the dominant factor for (persistent) criminal activity. During the research period, homelessness decreased (40) and given the association with delinquency, this might be an explanation for the positive results on the delinquency outcomes over time. Beach et al. (112) also found an association between homelessness and recidivism and underscores the need for housing services for this population. Beach argues to investigate the possibilities to adapt strategies for ACT like Critical Time Intervention (CTI) and the Housing First model, that have a focus on homelessness prevention and housing (112-114) .

Persistent criminal activities

Despite the positive long term outcomes found in this study, some of the patients have shown persistent criminal activities. Of the patients with reported contact(s) with the police or/and the justice system at twenty-four months, 26% was 'new', meaning that the patients had no reported contact(s) with the police or/and the justice system at baseline. Thus, a majority of the patients with reported contact(s) with police or/and justice system at twenty-four months were not first offenders; they also had reported contact(s) at baseline. These findings support the conclusion of Calsyn and colleagues (57) that extra interventions that specifically target reduction of criminal behavior are needed. First, close cooperation and mutual consultation between the staff of the outpatient mental health teams and of the criminal justice system, including the police, is needed (115-118). The police are often the first to respond to emergencies involving people with severe psychiatric disorders (119). However, the police may not always recognize a need for emergency psychiatric

resources. Formal training of police officers to help them better understand mental illness and to improve their attitudes toward individuals with mental disorders is needed to prevent criminalization (116). On the other hand, staff of the outpatient mental health teams should be trained in risk assessments and should provide cognitive behavioral interventions (115-118).

Limitations

This study has limitations that must be considered when interpreting these findings. The study was limited in that the patient data were collected by trained mental health care workers, making the reliability of the criminal outcomes an issue. It may be that they were not always adequately informed about the criminal activities of their patients. If possible, for future research it is recommendable to analyze (police) registration data. Second, the study design did not allow us to examine causal relations but only possible associations. Third, the association between homelessness and delinquency outcomes may be somewhat distorted as a result of punishment for sleeping in a doorway. Another limitation is that all reported criminal activity, whether it was heavy or small crime, had been counted. In other words, there is no account of different types of crime.

Conclusions

Among patients with severe mental illness, patients with a recent criminal history had more serious psychosocial problems at baseline. The association between homelessness and delinquency indicates that investment by teams to improve a patient's living situation can lead less criminal activity.

Despite the positive long term outcomes, some of the patients have shown persistent criminal activities. For these patients, extra interventions that specifically target reduction of criminal behavior are needed.

6. Native and ethnic minority patients with severe mental illness: a longitudinal study

7. Development of a Fidelity Scale for Flexible Assertive Community Treatment (FACT)

Background

Assertive community treatment (ACT) is a leading model for the community care and treatment of people with severe mental illness. It provides intensive assertive outreach services, mainly to people with highly complex problems. An approach known as flexible assertive community treatment (FACT) combines the principles of case management and ACT to target all people with severe mental illness in the local community. Although model fidelity assessment of ACT programs has long been possible using an instrument known as the DACTS, no such scale was yet available for FACT.

Aim

To develop a fidelity assessment scale for FACT teams.

Method

Drawing on knowledge from experts and feedback from FACT teams, we developed the Flexible Assertive Community Treatment Scale (FACTS). We carried out two pilot studies in 10 FACT teams to test and adapt the scale.

Results

The scale was finalized in 2008 and is currently being used in practice settings.

Conclusion

Researchers and practitioners now have two instruments, DACTS and FACTS, that enable fidelity assessment in programs providing ACT and FACT to people with severe mental illness. The outcomes may facilitate quality improvement and transparency.

Introduction

Assertive community treatment (ACT) is a type of outpatient mental health care designed for highly vulnerable people with severe mental illness who are living in the community. ACT teams are multidisciplinary. In addition to diagnostic assessment and psychiatric treatment, they provide support and assistance for problems with addiction, housing, finances, daily routine and employment. Some key characteristics of ACT are the shared caseload, the high intensity of services, the proactive, tenacious outreach approach, and the integration and continuity of care. ACT is a well-defined model whose effectiveness has been widely tested. It is recommended in the Dutch Multidisciplinary Guidelines on Schizophrenia.

An expanded model known as flexible assertive community treatment (FACT, also known as function ACT) was introduced in the Netherlands in 2004 (134). It is designed to provide care to the entire category of community people with severe mental illness, and it combines the principles of case management with ACT services. When clients are experiencing difficult times, ACT services are provided by the entire team; their names are then posted on a digital register called the FACT board, which is inspected daily by all team members. In periods when the clients' functioning is stable, they receive individual treatment from a broadly multidisciplinary team that includes a case manager, a psychiatrist, and practitioners from other disciplines (135).

By 2011, some 35 ACT teams and 80 FACT teams were at work in the Netherlands. The rapid rise of ACT and FACT reflects the keen interest throughout the country for these two mental health care models. The burgeoning number of teams underlines the need for quality assurance in the delivery of ACT and FACT, partly in order to facilitate health care purchasing (135). Research on ACT has shown that model fidelity of implementation is an important factor in achieving positive patient-level effects (36-38, 136).

The Certification Centre for ACT and Flexible ACT (CCAF) was established in the Netherlands in 2008 to ensure the quality and model fidelity of ACT and FACT delivery. It promotes the use of ACT and FACT by certifying teams that demonstrate sufficient model fidelity. A fidelity scale for ACT was already available in the Dartmouth Assertive Community Treatment Scale (DACTS; Dutch translation (70)). For the FACT model, experts in the CCAF began designing a fidelity scale known as FACTS in 2007 (137). This article describes the FACTS scale and its development process.

Model fidelity

A fidelity scale measures the degree to which a set of working practices conforms to an ideal-typical model. The scoring in the assessment focuses on the actual practices rather than on program plans or targets. Fidelity scales serve a variety of objectives:
- *benchmarking*, by enabling teams to judge themselves in comparison with other teams
- *outcome studies*, by making clear which set of practices is being assessed

- *quality promotion*, by providing specific ratings that can be used as points of leverage to improve team functioning
- *transparency*, by showing health care purchasers and clients whether services are being delivered as promised.

Developing the FACTS

The content and structure of the DACTS were taken as a starting point in designing the FACTS. The DACTS has 28 items scored on a five-point scale, with a score of 5 indicating maximum ACT implementation. The FACTS developers additionally drew on the General Organizational Index (GOI) from the United States Substance Abuse and Mental Health Services Administration (138); it consists of 12 items that focus on the general prerequisites for implementing and sustaining evidence-based practices within an organization.

Some DACTS items were modified, in that FACT serves broader group of clients than ACT and therefore delivers less intensive services on the average. Items were added to examine the process of transition from ACT to the less intensive care during FACT delivery. The DACTS chiefly assesses the structure and organization of ACT and to a far lesser extent what the practitioners actually do. We decided that the FACTS ought to devote more attention to the content of the services delivered. Because large numbers of FACT clients have schizophrenia or related psychotic conditions, we drew on the recommendations in the Multidisciplinary Guidelines on Schizophrenia (18, 139). As in the DACTS, each item was to be scored on a five-point scale ranging from 1 (minimal implementation) to 5 (maximum implementation). The higher the sum score, the greater the degree of model fidelity achieved by a team.

The initial version of the FACTS contained 57 items dealing with team structure and staffing, organization of services, available services (including evidence-based practices), policies and methodologies, client rehabilitation, and organizational prerequisites. These were divided into four subscales: team structure, organization of services, available services, and GOI. In the autumn of 2007, the tentative instrument was tested in four FACT teams by different pairs of CCAF board members and advisers. They carried out audits on the teams and tested the FACTS scale by independently scoring all items and later reaching consensus. As part of each audit, they sat in on a FACT team meeting, interviewed four or more team members from varied disciplines, paid visits to clients, and reviewed anonymized client files. After the audit, teams were asked to give feedback about the scale.

The conclusion of this first pilot round was that the administration of the fidelity scale was manageable for the pairs of raters and that the teams considered the items appropriate. The sequencing of the items needed improvement in several respects, as when items on evidence-based practices were positioned among items on the organization of services, or when overlapping or unclear items were included. Certain relevant items were found to be missing, including ones about rehabilitation specialists or about team involvement with hospitalized clients. The FACTS was adapted accordingly.

The second version, containing 66 items in 8 subscales (team structure, team process, diagnosis and treatment, recovery-oriented care, organization of services, social care, monitoring, and professionalism), was pilot-tested by pairs of raters in six further teams in 2008. These ranged from teams that had already been employing the FACT model for several years to teams that were still in the transition process from case management to FACT. The mean total score for the six teams on this second draft version of the FACTS was 3.3 (SD 0.24, range 3.1–3.7), reflecting a moderate degree of implementation. High average scores (≥ 4.5, reflecting good implementation) were achieved in terms of staff turnover (low attrition), staff capacity (few vacancies), number of nurses, treatment plan meetings, team spirit, short waiting lists, aftercare, and low client attrition. The six teams scored poorly (averaging ≤ 2.0, reflecting poor implementation) on psychological, addiction, and supported employment expertise, intensity of services provided at times of care intensification, individual crisis plans, individual rehabilitation plans, and client input and participation.

In the second version we examined interrater reliability in addition to item sequencing and overlap. On items where the two raters diverged by two or more points on the five-point scale, we adapted or refined the wordings.

Five items were removed from the scale: staff turnover, which was sufficiently covered by the staff capacity item; intensity of services, which was covered by the frequency-of-contact item; range of options and client input and participation, two items that failed to satisfy the SMART criteria (specific, measurable, achievable, resource-based, time-bound); and patient progress consultations during hospitalization, as that topic could be combined with the item on responsibility for hospital discharge planning. One new item was added: contact frequency in periods of less intensive care.

On the basis of these 10 pilot tests of the scale (4 in the first round and 6 in the second), the final version of the FACTS was approved in June, 2008 (137). The current scoring form contains 62 items in 7 subscales: Team Structure; Team Process; Diagnosis, Treatment, and Interventions; Organization of Services; Social Care; Monitoring; and Professionalism (see Table 1).

Table 1 FACTS subscales and items

Subscales	Items
I. Team structure	12 items: small caseload, staff capacity, team continuity, psychiatrist, psychologist, peer specialist, social worker, nurse, supported employment specialist, addiction specialist, rehabilitation specialist, case manager
II. Team process	11 items: shared caseload during less intensive care, shared caseloads during ACT, frequency of FACT-board case consultations, multidisciplinarity of FACT-board case consultations, treatment plan meetings, team leader criteria, FACT-board placement criteria, FACT-board placement procedure, FACT-board removal procedure, FACT-board contact frequency, care-as-usual contact frequency
III. Diagnosis, treatment, and interventions	14 items: multidisciplinarity of practical services, multidisciplinarity of diagnostic procedure, treatment plan, crisis intervention plan, rehabilitation plan, client-tailored care, client copy of treatment plan, medication plan, psychoeducation, cognitive-behavioral therapy, family interventions, vocational rehabilitation, integrated dual-disorder treatment, medical care
IV. Organization of services	11 items: program admission criteria, waiting list, population eligibility screening, 24-hour accessibility and crisis support, responsibility for hospital admission, emergency admission, services during hospitalization, responsibility for discharge planning, aftercare, transfer of care at program discharge, dropout prevention
V. Social care	5 items: outreach, coordination and cooperation, assertive engagement, cooperation with informal support system during ACT, cooperation with informal support system during care as usual
VI. Monitoring	4 items: population reach in catchment area, periodic client assessment, routine outcome monitoring, quality improvement cycle
VII. Professionalism	5 items: program philosophy commitment, reflective feedback, in-service FACT or EBP training, in-service recovery support training, team spirit

FACTS versus DACTS

In comparison to the DACTS, the assessment tool for ACT fidelity, our instrument the FACTS is broader-ranging, with expanded focuses on guideline-compliant interventions, the service delivery process, and client outcomes. We shall now highlight the key similarities and differences between the FACTS and the DACTS.

In the *Team Structure* subscale, we have added psychologists, social workers, and rehabilitation specialists to the series of ACT disciplines that included nurses, psychiatrists, addiction specialists, peer specialists, and supported employment specialists. The purpose of our additions was to enable the assessment of guideline-compliant interventions such as cognitive-behavioral therapy (psychologists) and recovery-oriented care (social workers, rehabilitation specialists).

Under *Team Process*, we have operationalized several distinctive working procedures, such as multidisciplinary service delivery with shared caseloads in ACT and the more individual approach in periods of relative calm, thereby adding several items that apply to the latter working procedure in FACT. Under *Diagnosis, Treatment, and Interventions* we have additionally operationalized various types of expertise required by the program. Whereas the DACTS assesses integrated dual-disorder treatment only, the FACTS includes cognitive-behavioral therapy, psychoeducation, family interventions, vocational rehabilitation (individual placement and support), and medication planning. We have further included the treatment, crisis, and rehabilitation plans to be drawn up in consultation with clients and signed by them.

In the *Organization of Services* subscale, we have mainly added items relating to program or hospital admission, including transfer of care at program discharge, attendance at hospital patient progress consultations, and emergency hospital admission. The *Social Care* subscale assesses care coordination both with the clients' significant others and with appropriate community stakeholders, the latter of which are not included in the DACTS. *Monitoring* applies to assessments of client outcomes that are useful at the client level and also at the team level (routine outcome monitoring or ROM). The final items in the FACTS relate to *Professionalism* (supervision and training) and derive in part from the General Organizational Index (GOI).

Administration

With its 62 items, the FACTS is more extensive than the DACTS and the GOI put together. The pilot testing showed that the FACTS can be administered in a single day during a model fidelity assessment by two independent raters. FACT teams employ the scale as an internal quality indicator. Since 2009, the Certification Centre for ACT and Flexible ACT (CCAF) has been using the DACTS and the FACTS in independent audits of ACT and FACT teams.

Conclusions

The FACTS is a model fidelity scale for flexible assertive community treatment (FACT) teams that was developed in recent years. Researchers, practitioners and the CCAF can now rely on two instruments, the DACTS and the FACTS, to assess the degree of model fidelity in the implementation of ACT and FACT in their work with clients with severe mental illness. The two scales provide potentials for quality improvement and transparency.

An English version of the FACTS can be downloaded at www.ccaf.nl/ccaf-english. The DACTS is available at www.dartmouth.edu/~implementation/index.html. The Dutch versions of the FACTS and the DACTS are available at www.ccaf.nl/audits/instrumenten-77430.

8. General discussion

This overall discussion groups the main findings of the thesis and draws conclusions regarding the research questions. The main research question addressed in this thesis was: *Is there an association between ACT model fidelity and long-term psychosocial outcomes of patients with severe mental illness (SMI)?*

Several important aspects of model fidelity and its associations with different outcomes were addressed. These include:

(1) *The association between ACT model fidelity and long long-term psychosocial outcomes of patients with SMI (chapter 2)*

(2) *The association between employing consumers of mental health services as consumer-providers in outpatient teams and long long-term psychosocial outcomes for patients with SMI (chapter 3)*

(3) *a. Differences in psychosocial outcomes of SMI patients with and without addiction problems*
b. The association between ACT model fidelity and changes in substance abuse problems
c. The association between level of psychosocial problems and changes in substance abuse problems (chapter 4)

(4) *a. Differences in the level of psychosocial problems between SMI patients with and without a recent criminal history*
b. Changes in delinquency outcomes over time and associations with model fidelity (chapter5)

(5) *a. Differences among ethnic minority and native SMI patients on psychosocial outcomes (chapter 6)*

In addition to studying associations between aspects of ACT model fidelity and outcomes we also described the *development of the fidelity scale for Flexible ACT (chapter 7)*

Methods of the study presented in this thesis

In a prospective longitudinal study, ACT model fidelity and patient outcomes were assessed in 20 outpatient treatment teams. Patients with SMI participated in the study. Outcomes were assessed 3 times using the Health of the Nation Outcome Scales (HoNOS), the Camberwell Assessment of Need Short Assessment Schedule (CANSAS), and other psychosocial outcomes like the number of hospital days and homeless days during a 2-year follow-up period.

In the next sections of the discussion we will summarize and discuss the research findings and their impact, describe the limitations of the study, and end with recommendations for future research.

8.1 Results and discussion

Main findings

In chapter 2 we examined the main research question: what is the association between ACT model fidelity and patient outcomes? High ACT model fidelity was associated with 1.) better outcomes on the HoNOS and 2.) less homeless days. Further analyses with the subscales of the fidelity scale showed that the subscale ´team structure´, containing items such as shared caseload and daily team meetings, was most strongly associated with better outcomes. Our study supports the importance of model fidelity for improving patient outcomes. In addition, the study supports the importance of the team structure approach, which is one of the distinguishing characteristics of ACT as compared to individual case management.

In chapter 3 we examined whether employing mental health consumers as consumer-providers was associated with psychosocial outcomes for patients with SMI. A positive association was found between consumer-provider presence and improvements in functioning on the HoNOS, met needs in relation to personal recovery, unmet needs in relation to personal recovery, and the number of homeless days. A negative association was found for consumer-provider presence and the number of hospital days. Consumer presence was one of the worst implemented items of the ACT model at baseline with only four (20%) of the 20 teams having a consumer-provider. Two years later, seven teams (35%) had fulfilled the role of consumer-provider. The study showed that consumer-providers may be important participants in outpatient teams serving patients with SMI, although integrating these providers as part of a team apparently is a slow process.

In chapter 4 we studied the associations between substance abuse problems in SMI patients, outcome, and ACT model fidelity. Patients with an addiction problem had more serious psychosocial problems at baseline. Substance abuse problems showed improvement over time, but this was not associated with ACT model fidelity.

Besides psychosocial problems, a large proportion of the patients in the study had a criminal history (chapter 5). At baseline, 49 percent of the patients had at least one reported contact with the police and/or the justice system in the past year. Patients with a recent criminal history had more serious psychosocial problems at baseline compared to those without a recent criminal history. Delinquency outcomes showed improvement over time, but this was also not associated with ACT model fidelity. The study showed an association between homelessness and criminal activity. The persistent criminal activities of some of the patients showed that for this group extra interventions are needed that specifically target reduction of criminal behavior.

A large proportion of the patients, almost 50 percent, belonged to an ethnic minority group, according to the prevailing Dutch definition (chapter 6). The largest ethnic minority groups in the study were respectively Surinamese, Dutch Antillean, Moroccan, and Turkish patients. The analyses

showed some differences in socio-demographic and psychosocial characteristics between native patients, western ethnic minority patients, and non-western ethnic minority patients. Patients from non-western ethnic minorities had the most unfavorable psychosocial problem level at baseline. This is in accordance to their unfavorable position in the Dutch society (131, 132). Except for the number of homeless days, which decreased significantly more over time for (non-) western ethnic minority patients, similar progression over time was shown for native, western and non- western patients. ACT fidelity did not affect the results.

With this thesis we obtained more insight into the association between ACT model fidelity and out-comes and the essential ingredients of the model. Previous studies on fidelity and outcomes used only one or a few elements of the model, and/or used only one outcome measure (mostly use of hospital beds). In our study, the fidelity scale for ACT, the DACTS, was used whereby we could not only examine associations with the total fidelity score but also with the three subscale scores. Besides, we did not only measure hospital bed use but also mental and social functioning, needs for care, and homelessness. Our study showed that high fidelity was associated with improved functioning and decreased homelessness.

Distinguishing ingredients of the ACT model

The 28 criteria of the ACT model described in the DACTS assumes the importance of implementing the whole model. In our study, we did find an association between the total fidelity score and improved outcomes. Though, it is possible that some components of the model are more important than others in improving outcomes. A systematic review and meta-regression of randomized controlled trials (31) examining intensive case management compared with standard care or low intensity case management with mean days per month in hospital as dependent variable found that details of team structure and organization (such as shared caseload and daily team meetings) were more important than the details of staffing (ratio of patients to staff, total size of the team, and the extent of psychiatric and nursing input to the team). The UK evaluation study of Brugha et al. (39), however, could not replicate this finding. The authors concluded that the team characteristics of Assertive Outreach (AO) services in England do not predict subsequent individual use of inpatient care. The characteristic of AO analyzed in the study of Brugha et al. was joint management of health and social service elements of community care, defined as requiring a common budget and at least one social worker and at least one health worker in the team. Additionally, joint management was combined with seven other team characteristics (including pro-portion of support workers, multidisciplinary team working, out of hours working, a psychiatrist on the team, a range of specialist skills available, specialist psychological interventions, and caseload per team member) into a total policy conformity score. For both the joint management and the conformity score no associations were found with the use of hospital beds. Probably not a remarkable result, as characteristics concerning team approach were modestly represented in the analyses of the Brugha et al. study (39).

Team structure

Our study examined which elements of the ACT model were associated with patient outcomes. When analyzing the three subscales of the DACTS, we found that the subscale ´team structure´, including ingredients such as shared caseload, daily team meetings, and a team leader who participates in patient care, was associated with lower HoNOS total scores over time, reflecting better functioning. Investigating the associations at HoNOS subscale level resulted in an association between the HoNOS subscale of symptomatic problems and total model fidelity.

The domains of the DACTS used in our study, as well as the outcome parameters, were not one-on-one comparable with the domains analyzed in the review of Burns et al. (31), but the common finding is that the distinguishing characteristic of ACT (team structure) compared with standard care or individual case management appears to be associated with outcome.

Team approach and team responsibility are characteristics that distinguish ACT from (individual) case management. Our study and Burns' review suggest that these distinguishing characteristics could make a difference in patient outcomes. Serving patients with SMI who are at risk of relapses and hospitalizations sets high standards on a single case manager and possibly results in risks for discontinuity of care as well as providing less integrated care and a later reaction to signs of deterioration; a team approach including shared responsibility seem valuable in tackling these risks.

Multidisciplinary team

Another distinguishing characteristic of ACT compared to individual case management and standard care is the multidisciplinary staffing. Besides the medical-psychiatric expertise in the teams provided by the psychiatrist and nurse, the employment specialist, substance abuse specialist, and the consumer-provider are present in the ACT model. In the review of Burns et al. (31) it was found that details of staffing were not associated with inpatient care use. However, the importance of having a multidisciplinary team was not unraveled, as only the extent of input by the psychiatrist and nurse was included. At the time of our study the consumer-provider was a relatively new discipline in Dutch ACT teams. Previous international research demonstrated an association between the addition of consumer-providers and a reduction in the use of hospital and crisis services (47, 140), fewer hospital days (48), an increased number of days spent in stable housing (49), and an increased quality of life (89). In chapter 3 we described that our analysis showed a positive association between the presence of a consumer-provider in the team and improvements in functioning on the HoNOS in relation to met needs in relation to personal recovery, unmet needs in relation to personal recovery, and the number of homeless days. A negative association was found for consumer-provider presence and the number of hospital days. The opposite association between consumer presence and the number of hospital days was counterintuitive. An explanation might be that consumer-providers heightened the attention to the clients' suffering and advocated for an intervention. It is possible that there was an association with the improvement in functioning and the increased hospital days.

Therefore it seems that a specific discipline such as consumer-provider may be of additional value for a team. Recently, the integration of consumers in Dutch mental health services is more common. This is partly due to the expansion of ACT teams in the Netherlands, because having a consumer as a member of the ACT team is part of the treatment model (141). Nevertheless, our study also confirmed that implementing consumer providers in mental health teams is a slow and complicated process. Several barriers interfere in this process, including privacy, law, and financial issues (88).

Substance abuse

As SMI patients often suffer from substance abuse problems, integrated dual diagnosis treatment and having a substance abuse specialist in the ACT team seemed important requirements for teams serving this population. In chapter four we described our findings that both DACTS total fidelity as well as DACTS substance abuse treatment fidelity showed no associations with improvements on substance abuse outcomes.

Previous research by Drake et al. (22) did find an association between ACT fidelity and better substance abuse outcomes. Implementation criteria for model fidelity included nine essential components of ACT and four additional components that focused on dual disorders (37). An explanation for the differences in outcomes between our study and the study of Drake et al. may be the differences in ACT model fidelity, more specifically, the model fidelity items related to the implementation of substance abuse treatment. In the US study a higher percentage of teams reached high ACT fidelity compared to our study. Also, in our national study the four DACTS items related to substance abuse treatment belonged to the worst implemented DACTS items. Moreover, in the Drake et al. study the associations between changes in substance abuse problems and DACTS substance abuse treatment fidelity items were not analyzed separately. Essock et al. (25) found that participants in both ACT as standard clinical case management for delivering integrated dual diagnosis treatment improved over time in multiple outcome domains, including substance use, and few differences were found between the two models. Thus, only one out of these three studies on ACT fidelity and substance abuse outcomes showed better results for high fidelity teams. Our study showed that the teams did not perform well with respect to integrated dual diagnosis treatment. This reflects the segregated (organization of) care in the Netherlands at a time where substance abuse problems and mental health problems were treated separately. It may be that the outcomes with respect to substance abuse problems improve when substance abuse treatment is better implemented and teams include specific interventions to treat substance abuse problems.

Implementation of ACT model fidelity

Assuming an association between high ACT model fidelity and improved patient outcomes implies an emphasis on a faithful implementation of the model. However, international research as well as our study showed that high fidelity is not easy to accomplish, and that implementation struggles are not unique to the ACT model (142).

In chapter 2 of the thesis the results of the fidelity measures showed that, at the time of the study, the implementation of ACT in the Netherlands was not on a high level. The teams varied from low to high DACTS model fidelity scores at baseline and overall the teams reached a moderate implementation of the model. Two years later, the DACTS scores were similar. Important to mention, the teams included in the study made different choices with respect to the implementation of ACT. Adherence to full model fidelity was not always the aim. In contrast with other countries, such as the United States and Canada (63-65), the implementation of the ACT model in the Netherlands was not part of a mental health reform and shift in locus of care from hospital to community. There also was no government funding and support. The implementation of ACT was a choice of the mental health organizations with the mission to improve the situation of the most severely mentally ill patients. This bottom-up approach has advantages as compared to a top-down approach, since the aim of achieving high fidelity is then an intrinsic motivation rather than an enforced decision of policy makers. However, this approach also has some disadvantages, such as the lack of broad support and vision at government level impedes promotion and facilitation of the implementation of the model. The lack of top-down support could partly explain our finding that in particular "service delivery" (including integrated dual diagnosis treatment), one of the three subscales of the ACT fidelity scale, was not optimally implemented. This is also reflected in chapter 4, which showed that the items regarding substance abuse treatment were poorly implemented. Possibly, this finding indicates that some items of the model were more difficult to implement when top-down support is absent.

Importantly, a shift from individual case management to a shared caseload approach can be achieved without financial resources. It requires a different mindset and vision of team members, but in order to provide, for example integrated dual diagnosis treatment as a team, resources are needed for the education of team members and for the set-up of interventions. Resources are also important for the implementation of the consumer-provider. The ACT model promulgates including a consumer on a team, yet at the time of the study not a common team member in Dutch mental health teams. At baseline, only 20% of the teams in the study had a consumer-provider as a team member and after two years this percentage only rose to 35%. The ACT model was probably a moderating factor in employing a consumer, but the low percentage also showed that a prescription of a fidelity scale and intrinsic motivation on team-level was not enough to accomplish consumer-providers as conventional team members in ACT teams.

Model fidelity in an international context

The implementation-level of ACT is also an issue in other countries (79, 143, 144). A survey published in 1995 found that less than one-third of more than 300 ACT programs in the US satisfied a minimum set of program standards with most failing to implement or drifting away from the program's fundamental principles and operations (145). Failed implementation and program drift are not unique to ACT (142). Examples are abundant both in mental health, e.g. psychosocial interventions (146) and Supported Employment (147), as in and other fields (148). Given the positive correlation between fidelity and outcomes, inadequate model implementation suggests less effective services (142, 148). Teague et al. (149) mentioned that program-based interventions like ACT are more complex than interventions delivered by a single clinician. For example, on the one hand Cognitive Behavioral Therapy (CBT) for psychosis intervention is specified strictly in terms of dyadic interaction, where on the other hand the ACT model includes aspects of organization, caseload, types of treatments and other services provided, as well as interactions with other programs (149).

Financial support, training and consultation, fidelity monitoring, effective leadership, and an innovative culture are crucial factors for successful implementation of a complex intervention such as the ACT model (64, 79). Based on the literature about fidelity and sustainability of ACT, Monroe-De-Vita et al. (142) described in more detail the important factors for the implementation of high ACT fidelity. The authors concluded that "no single strategy is sufficient for ensuring adequate ACT implementation and services of consistently good quality". For a successful implementation of ACT the authors recommended to implement a blend of policy and administrative (program standards, certification, financing/funding, and dedicated leadership), training and consultation (practice-based training, ongoing consultation, and technical assistance), team operational (rigorous selection and retention of team members), and program evaluation strategies (outcome monitoring, service-data monitoring, and fidelity assessment). Additional rigorous research on implementing and sustaining the quality of ACT and other evidence-based practices is needed (142).

Developments in Dutch mental health care serving SMI patients

Flexible Assertive Community Treatment

Doubts about the affordability and fit of the ACT model in more rural regions was the main reason for Dutch teams not pursuing high ACT fidelity implementation. These doubts led to the development of a new version of the ACT model, Flexible ACT (FACT; 41). FACT is based on the ACT model but serves a broader range of patients with SMI. The FACT team is a case management team with partly an individual approach and partly a team approach; the approach varies from patient to patient depending on the patient's needs. For more stable long-term patients FACT provides coordinated multidisciplinary treatment and care by individual case management. Unstable patients at risk of relapse, neglect, and readmission are provided with intensive assertive outreach care by the same team working with a shared caseload for this subgroup (Van Veldhuizen, 2007. Also for the FACT model a fidelity scale was developed, the FACT scale (46).

Dissemination and certification of ACT and FACT

Currently, in few Dutch cities ACT teams operate for the most crisis-prone (forensic) patients. Most frequently, however, FACT teams serve both the unstable as well as the more stable SMI patients, possibly complemented by an ACT team specifically serving forensic SMI patients or other specific patient groups (early psychosis, youth, SMI and learning disabilities). In this situation, ACT and FACT are not competing but coexisting as mutually supportive models for subgroups of SMI patients.

The wide dissemination of ACT and FACT teams in the Netherlands is a remarkable development in health care. First of all, as mentioned before, the development was initiated by professionals with the intention to improve the treatment for SMI patients through evidence based practices (46). Secondly, the implementation of the two models (ACT and FACT) was a relatively fast operation that resulted in a dissemination covering almost every part of the Netherlands. As far as we know, this implementation is unique for (Dutch) health care. It seems as though the ACT and FACT models fitted the spirit of the time, recognizing the needs of a neglected population in Dutch mental health care. The rise of ACT and FACT teams in the Netherlands raises concerns about the quality of the implementation. As research showed that ACT's effectiveness is associated with model fidelity, and this is also the assumption for FACT, faithful implementation is important. Therefore, a non-profit foundation was set up by Dutch mental health care professionals and researchers to certify ACT and FACT teams that maintain model fidelity (CCAF; www.ccaf.nl). Independent auditors conduct fidelity measures on behalf of the foundation. In this way the CCAF promotes model fidelity in the rollout of these two models for SMI patients. Certification of ACT and FACT teams is in line with developments in (mental) health care with the aim to improve transparency and quality (150). Though, an important difference compared to other developments is that CCAF was developed by the health care field. Research that examined the effect of certification on outcomes of health organizations showed ambivalent results (150). Compared to the implementation-level during our study, the operating ACT teams are nowadays much more faithful to the model (www.ccaf.nl), but the role of certification in this is unclear.

Evolution of the (F)ACT model and the fidelity scale

ACT was developed as a comprehensive model to provide treatments, services, and support needed by persons with SMI to help establish and maintain fulfilling lives in the community (1). At the start of the implementation of ACT in the Netherlands, the ACT teams were confronted with "deferred maintenance"; assertive outreach and crisis intervention was their core work. ACT had not yet fulfilled its rehabilitation goals (151). But as definitions for optimal treatment and expectations for treatment goals have changed over time, the practice of ACT has also evolved to incorporate other evidence-based practices in treatment and recovery (149, 152, 153). The widely used ACT fidelity scale, the DACTS, does not sufficiently cover relevant evidence based interventions, rehabilitation,

and recovery. In the FACT scale, the fidelity scale measuring Flexible ACT developed ten years after the DACTS, more attention is paid to these issues (46).

In the meantime, another ACT fidelity scale was developed in the USA. As the emphasis on structural features and the omission of some critical processes in the DACTS increasingly wringed (149), a new fidelity scale, the Tool for Measurement of ACT (TMACT) (154), was designed to address these issues. It assesses the use of evidence-based practices (e.g., supported employment, integrated dual disorder treatment), includes items for consumer recovery orientation, and strengthens measurement of team functioning. It has 47 items in six subscales respectively defining operations and structure, core team, specialist team, core practices, evidence-based practices, and person-centered planning and practices. DACTS and TMACT scores were compared for 10 teams over 18 months. Significant differences between the two measures varied over time and were a function of lower fidelity in key areas not measured by the DACTS, confirming the TMACT as a more comprehensive and higher standard than the DACTS and also more sensitive to change (154). An important critical comment on the TMACT is the inclusion of items that had not been individually demonstrated to predict outcomes in ACT (155). The developers of a fidelity scale in general have to find a difficult balance between theory based and evidence based items. Through research uses of program fidelity measures, monitoring, and ensuring adherence to particular interventions and identifying their critical ingredients, refinements and improvements can be done. For example, including a consumer-provider item in the ACT fidelity scale (and later in the FACTs) was important as it opened dialogue about this issue and was a conducive factor in employing consumer-providers. Our research on the specific contribution on consumer-providers was only possible since part of the teams actually included one as a team member.

8.2 Methodological limitations and strengths

The studies presented in this thesis have several methodological limitations and strengths.

Design
The study was not a randomized controlled trial with an intervention and a control group, therefore we can only assume an association between ACT model fidelity and outcome but not a causal relationship. This means that all associations described in this thesis do not prove the importance of model fidelity, as such, but only show that model-fidelity and outcome were correlated. This is a considerable limitation of the study. With the chosen design we were able to include twenty teams serving SMI patients located in different regions in the Netherlands with an expected fidelity range to be sufficient to draw conclusions. The implementation of a randomized controlled design for a complex intervention such as ACT at a broad scale was not feasible and we choose the best possible design, consequently making our conclusions with caution.

The design fitted the Dutch context in which ACT model fidelity was not imposed by the government but a choice of mental health teams. As a result, urban areas choose to implement the model faithfully, whereas the more suburban areas, with less crisis prone patients, choose a moderate implementation. Later, those suburban teams changed into the FACT model.
Importantly none of the teams achieved full ACT implementation. Possibly, the results were a mere consequence of working according to a specific frame of reference and were not caused by specific elements of the ACT model. Working according to a specific model may have resulted in a psychological effect of cohesion and spirit in a team. We must recognize this possible non-specific effect as we could not correct for this in the analyses.

Outcomes
ACT is a model for the most severely ill patients in the community who are at risk for relapse and depravation. Fluctuations in the patient's functioning and psychiatric symptomatology are common. This has consequences for the interpretation of results on the patient's level. The fact that some outcome measures did not change over time does not mean that on an individual level these outcomes did not change (156, 157). Also, we must recognize the clinical regression to the mean phenomenon that may have influenced the results. This is a common limitation in research of patients with persistent (mental) health problems as improvements in their condition may be related to natural fluctuations instead of the beneficial effect of treatment. Furthermore, with the repeated measurements design the possible statistical regression to the mean effect is relevant to mention (158). This means that if a variable is extreme on its first measurement it will tend to be closer to the

average on its second measurement (159). Importantly, the multilevel analysis was modelled with random effects for the nested patients and teams and was controlled for the differences in baseline scores between teams. Therefore, it is unlikely that the higher HoNOS scores and the higher number of homeless days at baseline in the high-fidelity teams explained the association between high DACTS scores and better outcomes during follow-up. If this would have been the case, we would also have expected an association between high fidelity and unmet needs over time, because at baseline these two were also associated. However, this was not found. Furthermore, we must recognize that the baseline values used in our study did not necessarily reflect the starting point of a patient treatment career (157).

By interpreting results on patient's outcomes we must also be aware of the possible interaction of outcome measures. As an involuntary admission is used to prevent further deterioration, this may hopefully result in better functioning. In other Dutch research on ACT an association between involuntary admission and improved functioning was found (157). This supports our suggestion in chapter 2 that in Dutch mental health admissions are used to improve a patient's situation and thereby support treatment outcome (40, 157). Considered in that light it is probably not surprising that we did not find a decrease in inpatient care, though we did find an improvement in functioning.

Inpatient care is often used as a single or primary outcome measure in research on ACT. As ACT is developed as an alternative for the hospital, this seems an obvious choice. Also, inpatient care, the number of admissions, and the number of admission days is an objective outcome that can be obtained by registered data. Although we agree that the number of admissions and inpatients days is an important outcome variable, it has its limitations. As mentioned above, although treatment in the community is preferable sometimes an admission can be useful as a last remedy to prevent further deterioration. Therefore, it is too simple to label an admission as a negative outcome. In research on ACT or related issues it is preferable to use a set of outcomes measures, including symptoms, functioning, and inpatient care.

Dutch context

Previous research on associations between ACT model fidelity and patient's outcomes was done in the USA. However, the studies in the USA were done on a small scale with few teams for only a few aspects of the ACT scale or for the total ACT fidelity score. Our study is noteworthy because it is the first ACT fidelity-outcome study outside the USA and gives more information about specific elements of the ACT model. Though, we must recognize that the Dutch context has some consequences for the generalizability of our findings. Important to mention is the bed rate in the Netherlands; its remains among the highest in the world (75, 160). Burns et al. (31) noted that "when hospital use is high, intensive case management tends to succeed in reducing it, but it is less successful when hospital use is already low." However, both the previous Dutch RCT on ACT (18) and our study did not find a decrease in admissions. During the study period, deinstitutionalization has not been a topic of high

priority for the Dutch government and as a consequence, the admission capacity in the Dutch mental health system was high. Experts and researchers have speculated that hospital admission may result simply because there are hospital beds available (161-164), and research found that the availability of within-program beds were associated with an increased risk of admission (165). Dutch experts mentioned the financial incentive for inpatient care as an important factor in the persistent high bed rate in the Netherlands (163). Also, the Netherlands can be characterized as a caring society, where marginalization is not accepted. (In)voluntary admission is considered as a positive option that is used to improve the patients' health or to shelter people in need (40). It is possible that a complex entity of factors, the availability and proximity of beds, the financial incentive, and the caring attitude of the Dutch mental health care system, affects the admission outcomes in Dutch research.

Study dropout

There was a considerable amount of drop out of patients during the study, meaning the loss of follow-up as the mental health care workers were not able to collect the necessary data in due time, which is not surprising as the included patients belonged to the most severe patients within mental health services. The patients who dropped out of the study had more problems at baseline than the patients who remained in the study. Nevertheless, study drop out was not related to model fidelity. The association between model fidelity and outcomes therefore remains intact.

For most of the teams, Routine Outcome Monitoring was at the time of the study a new activity, which may be a possible additional explanation for the considerable research dropout. Despite the (booster) training sessions and the efforts of the regional research coordinators, this study showed that Routine Outcome Monitoring is an implementation project itself.

Data collection

In addition to the limitations mentioned above, other elements in our studies may have compromised the results. The client data were collected by trained mental health care workers, whereby the clients' view was missing. And, in some cases, repeated assessments were made by different assessors. This may be problematic even if the psychometric properties of the instruments are satisfactory, as rater drifts may produce unwanted artifacts. We attempted to reduce the rating bias by training the care workers repeatedly.

Strengths of the study

Despite the limitations, the study yielded useful answers regarding the research questions. With our study we could confirm results of previous research in which an association between ACT model fidelity and patients outcomes was found. This study provides more understanding about the critical components of the ACT model. The strengths of our study is its longitudinal design and the large number of teams that were involved. Another strong point is the use of state-of-the-art statistical

technique and the correcting for the nested data using the multilevel technique to adequately assess the impact of different levels of ACT fidelity changes over time. Finally, a strength of this study is the broad set of outcome measurements that were used that required repeated data collection of patient outcomes by the participating teams. Some of the teams already used one or more Routine Outcome Monitoring instruments and the choice for the ROM set for this study was based on these existing ROM practices. The study has contributed to the stimulation of outcome monitoring and thereby fitted the emerging trend of the development of the mental health care by using ROM.

8.3 Recommendations for future research and policy implications

In the first place, research examining the aspects of team structure in more detail is warranted. As described in chapter 2, the results of our study together with the results of a previous review indicate that team structure is an important element for teams serving SMI patients. The question is whether this effect of team structure is limited to team work, meaning that team members have a shared caseload and are informed about the situation of all patients or that a certain team structure also includes team responsibility and a restriction in outsourcing of services. Future research could give more insight in the delineation of team structure.

Also, it would be of great interest, if individual case management within a team approach, as performed by a FACT team, is more preferable than a complete team approach as performed by an ACT team.

In previous studies on ACT, the examined outcome measures often included inpatient care, drop outs, symptoms, and stable housing and less often areas such as quality of life, (health) needs, fulfilling social roles, and recovery, even though these domains cover the ambitions of the ACT and FACT model (1, 135). Also, the effects of ACT on the environment, such as caregivers (support) and the neighborhood (nuisance) requires more research. Also, in addition to the cost-effectiveness research, it would be interesting to examine the social benefits of the use of ACT and FACT.

The development of ACT and FACT teams serving a subpopulation of SMI patients, including forensic and youth, requires more research. This involves research that gives more insight into the effectiveness of these teams as well as research which examines the critical aspects.

The findings in this thesis show the importance of intensive multidisciplinary care for people with severe mental illness. Team approach and shared caseload are vital ingredients for serving these "difficult-to-engage patients". The upcoming policy changes and cost reduction in the Dutch mental health care system threaten this approach. It is expected that walls between sectors will arise, and integrative multidisciplinary care with a shared caseload approach is at risk. This threatens continuity of care and may lead to drop out. Patients with SMI deserve high quality care and support in their daily activities to live a life as independently as possible. Impoverishment of care for this group is ultimately not cost saving and, moreover, it is unethical.

Summary

Introduction

Assertive Community Treatment is a model for care and treatment of patients with the most severe mental illness in the community. Key principles of Assertive Community Treatment (ACT) are: integration of services, low patient–staff ratio, locus of contact in the community, medication management, focus on everyday problems in living, assertive outreach, and time unlimited services.

ACT is the most extensively studied care delivery model for people with severe mental illness (SMI) and widely implemented in- and outside the US. The first studies date back to the early years of ACT, the 70s of the last century, and since then a dozen of studies have been published. The first generation randomized controlled trials, before 1998 and mostly conducted in the US, clearly showed positive results for ACT. These studies showed better results for ACT compared to care as usual, achieved particularly on the outcomes stable housing, admissions and engagement. The second generation trials, after 1998 and conducted mostly outside the US, showed inconsistent results. Some studies found some positive results for ACT, but others did not find a difference between ACT and the control group. In particular, the outcome measures "admission rate" and "admission duration" showed, in contrast to the initial studies, no positive effects in favor of ACT. The combination of these disappointing results and the fact that ACT is an expensive model of care, led particularly in England to discussions about the value of ACT compared to standard care. Explanations for the modest results of the second generation studies were 1.) the similarity between ACT and the control groups, 2.) the lack of model fidelity of the ACT teams and 3.) the relatively low hospital use at the start of the study.

Despite the extensive number of studies, there are still some research questions remained. As studies examining the association between the degree to which the ACT model is implemented and effect on patient outcomes are rare, the role of model fidelity is unclear. Also, it is unknown whether some ingredients of the model are more important than others, or whether certain ingredients are associated with specific patients outcomes.

From 2005 on, another care delivery model for SMI patients was developed. Flexible Assertive Community Treatment, Flexible ACT, was inspired by and based on the ACT model, but with its adaptions more suitable in rural areas and able to serve a broader range of patients with severe mental illness. The Flexible ACT team is a case management team with partly an individual approach and partly a team approach; the approach varies from patient to patient, depending on the patient's needs. For more stable long-term patients, Flexible ACT provides coordinated multidisciplinary treatment and care by individual case management. Unstable patients at risk of relapse, neglect and readmission are provided with intensive assertive outreach care by the same team, working with a shared caseload for this subgroup.

Aims of the thesis

This thesis addresses two principal aims:

- To study the association between (ingredients of) the ACT model fidelity and patient 'outcomes;
- To describe the development of the Flexible ACT scale.

Chapters 2 to 6 use data of our prospective longitudinal study, conducted from 2005 – 2008, in which twenty outpatient teams for SMI patients located in different regions of the Netherlands participated. The teams included in the study made different choices for the implementation of outreaching care for patients with severe mental illness. Adherence to ACT fidelity criteria was not always their aim. 530 patients with severe mental illness participated in the study. ACT model fidelity and patient outcomes were assessed during a 2-year follow-up period. Data were analyzed using multilevel statistics.

As ACT teams were slowly replaced by Flexible ACT teams in the Netherlands, we conclude in chapter 7 with the subsequent evolution of the Flexible ACT model fidelity scale.

Results

In chapter 2 we investigated the association between model fidelity and outcome in the twenty outpatient teams. High ACT model fidelity was associated with improvements in functioning on the HoNOS and less homeless days. Among all of the ACT ingredients, team structure was associated with better outcomes. No associations were found between ACT model fidelity, number of hospital days, and (un)met needs. Investigating the associations at HoNOS subscale level resulted in an association between the HoNOS subscale of symptomatic problems and total model fidelity. Our evidence supports the importance of model fidelity for improving patient outcomes.

In chapter 3 we examined whether employing mental health consumers as consumer-providers in assertive community treatment teams can enhance outcomes for patients with severe mental illness. A positive association was found between consumer-provider presence and improvements in functioning on the HoNOS, met needs in relation to personal recovery, unmet needs in relation to personal recovery, and number of homeless days. A negative association was found for consumer-provider presence and the number of hospital days. We concluded that consumer-providers are important participants in outpatient teams serving patients with severe mental illnesses, although integrating these providers as part of a team is a slow process.

In chapter 4 associations between substance abuse problems in severely mentally ill patients, outcome and ACT model fidelity were examined. We found that among patients with severe mental illness, patients with an addiction problem had more serious psychosocial problems at baseline. Substance abuse problems showed improvement over time, but this was not associated with ACT model fidelity. The results indicate that investment by teams to improve a patient's psychosocial situation can lead to improvements on substance problems.

In chapter 5 delinquency outcomes were examined among the 530 SMI patients. At baseline, 49

percent of the patients had a recent criminal history, meaning that they had at least one reported contact with the police and/or the justice system in the past year. Patients with a recent criminal history had more serious psychosocial problems at baseline compared to those without a recent criminal history. Delinquency outcomes showed improvement over time, but this was not associated with ACT model fidelity. An association was found between homelessness and criminal activity. The persistent criminal activities of some of the patients showed that for this group extra interventions are needed that specifically target reduction of criminal behavior.

In chapter 6 we examined whether severely mentally ill patients from ethnic minority groups differ from their native counterparts in psychosocial functioning at baseline and after 24 months follow-up. In addition, the association between ACT and possible differences between native patients and patients from ethnic minorities on long term outcomes was examined. We found that almost half of the sample belonged to an ethnic minority group. A majority of these patients were non-western patients. Baseline comparison between native, western, and non-western patients showed significant differences in socio-demographic characteristics and psychosocial functioning. Overall, native patients had less (severe) psychosocial problems at baseline compared to (non-) western patients. Except for the number of homeless days, which decreased significantly more over time for (non-) western ethnic minority patients, similar progression over time was shown for native, western and non- western patients. ACT fidelity did not affect the results. We conclude that the psychosocial level of functioning of patients with severe mental illness can enhance over time, regardless the patient's ethnic background.

Chapter 7 describes the development of a fidelity assessment scale for Flexible ACT teams. Drawing on knowledge from experts and feedback from FACT teams, we developed the Flexible Assertive Community Treatment Scale (FACTS). We carried out two pilot studies in 10 Flexible ACT teams to test and adapt the scale. The scale was finalized in 2008 and is currently being used in practice settings. Researchers and practitioners now have two instruments, DACTS and FACTS, that enable fidelity assessment in programs providing ACT and Flexible ACT to people with severe mental illness. The outcomes may facilitate quality improvement and transparency.

Finally, in chapter 8, the general discussion considers the findings, strengths and limitations of the thesis. Despite the limitations, the study on ACT model fidelity and patient outcomes yielded useful answers regarding the research questions. With our study we could confirm results of previous research in which an association between ACT model fidelity and patients outcomes was found. The study provides more understanding about the critical components of the ACT model.

Our study showed that high fidelity was associated with improved functioning and decreased homelessness. In particular, team structure, the subscale of the ACT fidelity scale including ingredients such as shared caseload, daily team meetings, and a team leader who participates in patient care, was associated with lower HoNOS total scores over time, reflecting better functioning. Team approach and team responsibility are characteristics that distinguish ACT from (individual) case management. Our study suggests that these distinguishing characteristics could make a difference in patient outcomes.

Samenvatting

Inleiding

Assertive Community Treatment is een model voor zorg en behandeling van patiënten met ernstige psychiatrische aandoeningen in de samenleving. Belangrijke elementen van Assertive Community Treatment (ACT) zijn: integratie en continuïteit van zorg, een lage patiënt-staf verhouding, contact op de plek waar de patiënt zich bevindt, medicatie management, focus op dagelijkse problemen, een assertieve ambulante benadering, en zorg voor onbeperkte tijd.

ACT is het meest uitvoerig onderzochte organisatiemodel voor mensen met ernstige psychiatrische aandoeningen (epa) en is op grote schaal geïmplementeerd binnen en buiten de Verenigde Staten. De eerste studies dateren uit de beginjaren van ACT, de jaren '70 van de vorige eeuw, en sindsdien zijn er tientallen studies gepubliceerd. De eerste generatie gerandomiseerde gecontroleerde studies, vóór 1998 en meestal uitgevoerd in de Verenigde Staten, toonden duidelijk positieve resultaten voor ACT. Deze studies lieten betere resultaten zien voor ACT in vergelijking met standaardzorg, met name voor de uitkomstmaten stabiele huisvesting, opnames en *engagement.*

De tweede generatie studies, ná 1998 en vooral buiten de Verenigde Staten uitgevoerd, lieten inconsistente resultaten zien. Sommige studies vonden een aantal positieve resultaten voor ACT, maar andere studies konden geen verschil tussen ACT en de controlegroep aantonen. Met name de uitkomstmaten "opnames" en "opnameduur" lieten, in tegenstelling tot de eerdere studies, geen positief effect zien ten gunste van ACT. De combinatie van deze teleurstellende resultaten en het feit dat ACT een duur zorgmodel is, leidde met name in Engeland tot discussies over de meerwaarde van ACT ten opzichte van standaardzorg. Verklaringen voor de matige resultaten van de tweede generatie studies waren 1.) de overeenkomst tussen ACT en de controlegroepen, 2.) het gebrek aan modelgetrouwheid van de ACT teams en 3.) een relatief laag opnamegebruik bij aanvang van de studie.

Ondanks het grote aantal studies naar ACT, zijn er nog een aantal onderzoeksvragen onbeantwoord gebleven. Zo zijn studies naar het verband tussen de mate waarin het ACT-model wordt geïmplementeerd en effecten op patiëntniveau zeldzaam, en is de rol van modelgetrouwheid onduidelijk. Ook is het onbekend of sommige elementen van het model belangrijker zijn dan andere, of dat bepaalde elementen geassocieerd zijn met specifieke resultaten op patiëntniveau.

Vanaf 2005 werd in Nederland een ander zorgmodel voor patiënten met ernstige psychiatrische aandoeningen ontwikkeld: Flexible Assertive Community Treatment (Flexible ACT). Flexible ACT is geïnspireerd door en gebaseerd op het ACT-model, maar is met zijn aanpassingen meer geschikt in de landelijke gebieden en in staat om een bredere groep epa-patiënten te bedienen. Een Flexible ACT-team is een casemanagement team met deels een individuele aanpak en deels een teamaan-

pak. De benadering verschilt van patiënt tot patiënt, afhankelijk van de behoeften van de patiënt. Voor meer stabiele patiënten biedt Flexible ACT gecoördineerde multidisciplinaire zorg en behandeling door middel van individueel casemanagement. Voor instabiele patiënten met een risico op terugval, verwaarlozing en opname wordt intensieve bemoeizorg zorg ingezet en wordt gewerkt met een teambenadering.

Doelstellingen van het proefschrift

Dit proefschrift heeft de volgende twee hoofddoelstellingen:

- Het onderzoeken van de associatie tussen (elementen van) het ACT-model en effecten op patiëntniveau;
- Het beschrijven van de ontwikkeling van de Flexible ACT schaal.

In de hoofdstukken 2 tot en met 6 is gebruik gemaakt van data van onze longitudinale studie, uitgevoerd in de periode 2005-2008. Aan deze studie namen twintig ambulante teams uit verschillende regio's in Nederland mee; allemaal bedienen zij epa-patiënten. De teams maakten verschillende keuzes voor de uitvoering van ambulante zorg voor patiënten met ernstige psychiatrische aandoeningen. Niet alle teams hadden (volledige) getrouwheid aan het ACT-model als doel gesteld.

Aan het onderzoek namen 530 patiënten met ernstige psychiatrische aandoeningen deel. Gegevens over ACT modelgetrouwheid en patiëntuitkomstmaten werden gedurende een follow-up periode van 2 jaar verzameld. De gegevens zijn geanalyseerd met multilevel analyse statistiek.

Omdat (een aanzienlijk deel van de) ACT-teams in Nederland geleidelijk werden vervangen door Flexible ACT-teams, beschrijven we in hoofdstuk 7 de ontwikkeling van de Flexible ACT modelgetrouwheidsschaal.

Resultaten

In hoofdstuk 2 onderzochten we de relatie tussen ACT modelgetrouwheid en resultaten op patiëntniveau in de twintig ambulante teams. Hoge modelgetrouwheid bleek geassocieerd met verbeteringen van het functioneren op de HoNOS en minder daklozen dagen. Teamstructuur, een van de drie subschalen van de modelgetrouwheidsschaal, bleek met name geassocieerd te zijn met betere resultaten op patiëntniveau. Er werden geen associaties gevonden tussen getrouwheid aan het ACT-model en het aantal opnamedagen en het aantal (on)vervulde zorgbehoeften. Een nadere beschouwing van de subschalen van de HoNOS liet een associatie tussen de subschaal symptomatische problemen en ACT modelgetrouwheid zien. De bevindingen van de studie ondersteunen het belang van het modelgetrouwheid.

In hoofdstuk 3 hebben we onderzocht of de aanstelling van ervaringsdeskundigen in ACT teams kan leiden tot een verbetering van uitkomsten van epa-patiënten. Er werd een positieve associatie gevonden tussen de aanwezigheid van een ervaringsdeskundige in een team en verbeteringen van

het functioneren op de HoNOS, vervulde zorgbehoeften in relatie tot persoonlijk herstel, onvervulde zorgbehoeften in relatie tot persoonlijk herstel, en het aantal daklozen dagen. Een negatieve associatie werd gevonden voor de aanwezigheid van een ervaringsdeskundige in een team en het aantal opnamedagen. In het hoofdstuk concluderen we dat ervaringsdeskundigen belangrijke teamleden kunnen zijn voor deze teams; de integratie van de discipline in de teams is echter een langzaam proces.

In hoofdstuk 4 zijn de associaties onderzocht tussen verslavingsproblematiek, uitkomsten op patiëntniveau en ACT modelgetrouwheid. We vonden dat epa-patiënten mét verslavingsproblematiek bij de aanvangsmeting ernstigere psychosociale problemen hadden in vergelijking met epa-patiënten zónder verslavingsproblematiek. Er werd na twee jaar een afname van verslavingsproblematiek waargenomen, maar dit effect was niet geassocieerd met ACT modelgetrouwheid. De resultaten laten zien dat pogingen van teams om de psychosociale situatie van een patiënt te verbeteren, kunnen leiden tot verbeteringen op het gebied van verslavingsuitkomstmaten.

In hoofdstuk 5 is onderzocht of de criminele activiteiten van de epa- patiënten uit de studie na twee jaar waren afgenomen. Bij aanvang van de studie bleek dat 49 procent van de patiënten in het afgelopen jaar ten minste één contact met politie en/of justitie had gehad. Deze groep patiënten had bij aanvang van de studie meer ernstige psychosociale problemen in vergelijking met patiënten zonder recente criminele activiteiten. Uitkomsten op het gebied van criminaliteit vertoonden verbetering na twee jaar, maar dit was niet geassocieerd met ACT modelgetrouwheid. Wel werd er een associatie gevonden tussen dakloosheid en criminele activiteiten. Uit de persistente criminele activiteiten van een deel van de patiënten blijkt dat voor deze groep aanvullende interventies nodig zijn die specifiek gericht zijn op het verminderen van het criminele gedrag.

In hoofdstuk 6 onderzochten we of het psychosociaal functioneren van epa-patiënten uit etnische minderheidsgroepen verschilt ten opzichte van autochtone epa-patiënten. Daarnaast is de relatie tussen ACT en mogelijke verschillen tussen autochtone en allochtone patiënten onderzocht. Bijna de helft van de 530 patiënten behoorde tot een etnische minderheidsgroep, waarvan een meerderheid niet-westerse patiënten waren. Vergelijking tussen autochtone, westerse en niet-westerse patiënten vertoonden significante verschillen in socio-demografische kenmerken en psychosociaal functioneren bij aanvang van de studie. Autochtone patiënten hadden minder (ernstige) psychosociale problemen bij aanvang in vergelijking met (niet-) westerse patiënten. Behalve voor het aantal dakloze dagen, werd een vergelijkbare verbetering gezien over de tijd voor autochtone, westerse en niet-westerse patiënten. Het aantal dakloze dagen nam significant meer af bij westerse en niet-westerse allochtone patiënten ten opzichte van autochtone patiënten. ACT modelgetrouwheid had geen invloed op de resultaten. Uit de studie kunnen we concluderen dat het psychosociaal niveau van functioneren van epa-patiënten kan verbeteren; dit is ongeacht de etnische achtergrond van de patiënt.

Hoofdstuk 7 beschrijft de ontwikkeling van een modelgetrouwheidsschaal voor Flexible ACT-teams. Op basis van de kennis van experts en feedback van FACT-teams, is de Flexibele Assertive Community Treatment Scale (FACTS) ontwikkeld. Er zijn twee pilots in 10 Flexibele ACT teams uitgevoerd om het instrument te testen en de schaal aan te passen. De schaal werd in 2008 afgerond en wordt momenteel gebruikt in de praktijk. Onderzoekers en professionals hebben nu de modelgetrouwheidsschaal voor ACT teams, DACTS, en de modelgetrouwheidsschaal voor Flexible ACT teams, FACTS, om getrouwheid aan het model te kunnen vaststellen. De uitkomsten van de getrouwheidsmetingen kunnen kwaliteitsverbetering en transparantie ondersteunen.

Tenslotte worden in hoofdstuk 8, de discussie, de bevindingen, sterke punten en beperkingen van het proefschrift besproken. Ondanks de beperkingen heeft deze studie over ACT-modeltrouw en patiëntuitkomsten geresulteerd in waardevolle bijdragen met betrekking tot de onderzoeksvragen. Met deze studie kunnen we de resultaten van eerder onderzoek, waarin een verband tussen ACT modelgetrouwheid en patiëntuitkomsten werd gevonden, bevestigen. Daarnaast geeft de studie meer inzicht in de kritische elementen van het ACT-model.

Onze studie toont aan dat hoge modelgetrouwheid is geassocieerd met een beter functioneren en een minder dakloosheid. In het bijzonder is teamstructuur, de subschaal van de ACT schaal met daarin onderdelen als gedeelde caseload, dagelijkse teamvergaderingen, en een meewerkende teamleider, geassocieerd met een verbeterd functioneren op de HoNOS. Teamaanpak en teamverantwoordelijkheid zijn kenmerken die ACT onderscheiden van (individueel) casemanagement. Onze studie laat zien dat deze onderscheidende kenmerken het verschil kunnen maken op patiëntniveau.

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Dankwoord

En dan is daar het moment dat je een dankwoord mag schrijven. Ik heb altijd gedacht dat ik, 'bevrijd' van het wetenschappelijke format, mijn pen de vrije loop zou laten om deze pas na zo'n 6 pagina's aan persoonlijke dankbetuigingen weer los te laten. Maar soms besluit je anders.

Mijn dank gaat uit naar mijn promotoren Niels Mulder, Philippe Delespaul en Hans Kroon. In dit trio vond ik een bundeling van kennis en ervarenheid, gecombineerd met realisme en vriendelijkheid. Precies wat ik nodig had. Hans wil ik daarnaast bedanken voor zijn inzet als leidinggevende om mijn proefschrift zoveel als mogelijk te faciliteren.

De co-auteurs van de artikelen wil ik hartelijk bedanken voor hun meedenk- en bijschaafwerk. Alle hulpverleners die voor het onderzoek vragenlijsten hebben ingevuld wil ik hierbij nogmaals danken voor hun inzet.

Jan Walburg, voormalig voorzitter van het Trimbos-instituut, bedank ik voor het uitspreken van zijn vertrouwen in mijn promotietraject.

Een ieder die op enig moment interesse heeft getoond in (de voortgang van) mijn proefschrift wil ik hiervoor bedanken. Reacties als "Wat een boeiend onderzoek" of "Oh maar dan ben je al heel ver" zijn heel waardevol geweest.

Mijn grootste dank gaat uit naar iedereen die in de afgelopen jaren interesse in mij heeft getoond. Aan iedereen die op zijn eigen manier een schouder om mij heen heeft geslagen of mij een lach op het gezicht heeft bezorgd.

Bedankt,
lieve mama en papa
lieve grote zus Harmke en Olaf
lieve Peter, Annemieke, Ilse, Erik en Kees
Matthijs en Lisa, mijn allerliefste boefjes.

About the author

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Place, C., van Vugt, M., & Neijmeijer, L. (2011). Literatuurstudie naar de effectiviteit van forensische (F)ACT. Utrecht: Trimbos-instituut.

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Van Vugt, M., & Tuynman, M. (2011). Instroom, doorstroom en uitstroom van cliënten in de MO en RIBW. Rapport concept mapping in opdracht van de Federatie Opvang en de Tussenvoorziening. Utrecht: Trimbos-instituut.

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Michon, H., van Busschbach, J., van Vugt, M., Stant, D., & van Weeghel, J. (2013). De effectiviteit van Individuele Plaatsing en Support. In: Psychiatrische Rehabilitatie, Jaarboek 2013-2014, Uitgeverij SPW, Amsterdam.

Van Veldhuizen, J., Kroon, H., & van Vugt, M. (2014). FACT-wijkteams. In: Handboek Sociale psychiatrie. Van der Feltz-Cornelis & C.L. Mulder (red.). De Tijdstroom: Utrecht.

Portfolio

Name PhD student: Maaike van Vugt
PhD period:
Erasmus MC Department: Psychiatry
Promotor: Prof. dr. C.L. Mulder
Research School: O3 Research Center
Employer: Trimbos-institute, Netherlands Institute of Mental Health and Addiction

Training	Year
Projectmanagement, Trimbos-instituut	2006
Covey training, FranklinCovey, Trimbos-instituut	2006
TalentOntwikkelingsProgramma (TOP), Trimbos-instituut	2006 - 2007
Cursus Multivariate statistiek en missing data in de praktijk, Universiteit Utrecht	2007
Training Presentatievaardigheden, Ike Smitskamp	2007
Multilevel analyse, Jos Twisk	2009

Presentations: national conferences	Year
Herstel en Rehabilitatie congres, Utrecht: "Rehabilitatie, herstel en maatschappelijke participatie van ACT-cliënten nader bekeken."	2006
ACT congres, Leiden: "Verlangen naar modelgetrouwheid?"	2007
(F)ACT platform, Utrecht: "Bevindingen FACTs."	2008
(F)ACT platform, Utrecht: "ACT en FACT in Nederland."	2008
NVvP Voorjaarscongres, Groningen: "ACT en FACT in Nederland."	2009
Platform Rehabilitatieonderzoekers, Utrecht: "ACT en FACT in Nederland - Modelgetrouwheid, cliëntuitkomsten, rehabilitatie."	2009
(F)ACT congres, Goirle: "Certificering."	2009
Schizofreniecongres, Zwolle: "Aan het werk met IPS. Resultaten van een effectstudie en een brug naar de IRB."	2011

Presentations: international conferences   **Year**

ACTA conference, Grand Rapids, USA:
"Assertive Community Treatment in the Netherlands."   2007
ACTA conference, Indianapolis, USA: "ACT in the Netherlands.
The importance of model fidelity and the quality of implementation." 2008
European Congress on Assertive Outreach, Rotterdam, the Netherlands:
"Certification and model fidelity."   2011

Teaching activities   **Year**

Training hulpverleners in ROM: HoNOS en CANSAS, Trimbos-instituut   2007
Training DACTS en FACTS voor auditoren, St. CCAF   2008
Training meetinstrumenten ROM FOR (F)ACT, Trimbos-instituut   2010
Training DACTS en FACTS voor auditoren, St. CCAF   2010

Other relevant activities   **Year**

St. CCAF – Advisor   2008-present
St. CCAF – Auditor   2008-present
GGZ Nederland - Expertgroep ROM Forensisch   2020 - 2011