Models of Community Care for Severe Mental Illness: A Review of Research on Case Management

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Abstract

We describe different models of community care for persons with severe mental illness and review the research literature on case management, including the results of 75 studies. Most research has been conducted on the assertive community treatment (ACT) or intensive case management (ICM) models. Controlled research on ACT and ICM indicates that these models reduce time in the hospital and improve housing stability, especially among patients who are high service users. ACT and ICM appear to have moderate effects on improving symptomatology and quality of life. Most studies suggest little effect of ACT and ICM on social functioning, arrests and time spent in jail, or vocational functioning. Studies on reducing or withdrawing ACT or ICM services suggest some deterioration in gains. Research on other models of community care is inconclusive. We discuss the implications of the findings in terms of the need for specialization of ACT or ICM teams to address social and vocational functioning and substance abuse. We suggest directions for future research on models of community care, including evaluating implementation fidelity, exploring patient predictors of improvement, and evaluating the role of the helping alliance in mediating outcome.

Key words: Case management, assertive community treatment, community care.

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The deinstitutionalization movement of the 1950s and 1960s, continuing up to the present, changed the locus of treatment for most persons with severe psychiatric disorders from the hospital to the community (Talbott 1987). Implicit in the Community Mental Health Center (CMHC) Construction Act of 1963 (Bloom 1984), which paved the way for developing local mental health centers near patients' homes, was the assumption that these centers would provide services in a central location, similar to State hospitals, with the primary difference that patients would be living in the community instead of being hospitalized. As CMHCs began to provide more psychiatric services, recognition grew of the need for a wide range of services to meet the diverse needs of the mentally ill population.

The development of additional mental health services at the community level had both positive and negative consequences. On the positive side, some services became available for persons with less severe mental illness who had never been institutionalized. On the negative side, the multiplicity of services and the growing complexity of the mental health system made it difficult for persons with severe mental illness to successfully negotiate and access necessary services (Mechanic 1991). Even worse, it became clear that many seriously ill persons, particularly those with schizophrenia, showed little initiative in seeking out psychiatric services, were unable to advocate for themselves, and were difficult to engage in community-based services. Instead of services in the community being easier to access, they proved to be more difficult for patients who formerly would have been served in the hospital (Bachrach 1982; Lamb 1982).

In response to the growing need for community-based services for persons with severe mental illness, the National Institute of Mental Health established the Community Support Program (CSP) in 1977 (Turner and TenHoor 1978). The primary function of CSP was to improve the coordination of mental health services in the community, with special emphasis on enhancing the role of States, which had previously played a minimal role in the deinstitutionalization movement (Shern et al. 1989). Further involvement of the States was ensured when a funding mechanism was established that provided block

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grants directly to States to improve their community-based mental health systems (Surles 1987).

Recognition of the need to help persons with severe mental illness access and coordinate different psychiatric services led to the development of a new service function, case management, and eventually a new mental health professional, the case manager. Initially, the roles of the case manager were to refer to, coordinate, and integrate various services into a cohesive program best suited to meet the needs of the individual patient. While these basic duties have remained an integral part of case management, the responsibilities of case managers have grown, and different models of case management have evolved. Indeed, as we will discuss, the activities of case managers in some models go far beyond traditional case management and may include directly providing a variety of clinical, rehabilitative, and social services.

Models of Case Management

A variety of different models of case management have been developed over the past two decades (Robinson and Toff-Bergman 1990; Harris and Bergman 1993). We provide a brief description of those models that have generated the most discussion and research, including the broker service model, the clinical case management model, the assertive community treatment model, the intensive case management model, the strengths model, and the rehabilitation model.

The first articulated approach to case management for persons with severe mental illness was the broker or expanded-broker model. In this model, the case manager's primary role is to connect the patient to needed services and to coordinate between different service providers. The specific functions of brokered case management include (1) assessment, (2) planning, (3) linking to services, (4) monitoring, and (5) advocacy (Intagliata 1982). This model emerged early in the wake of deinstitutionalization to address many patients' problems in navigating the complex and confusing community mental health system (Moore 1990).

The major emphasis of the brokered case management approach is on assessing patient needs, referring to appropriate services, and coordinating and ongoing treatment monitoring. A limitation of this model is that case managers are expected to connect patients with needed clinical services without themselves acting as clinicians. This is problematic because it assumes that clinical skills are not needed to perform effective case management and that a provider can always be identified to provide necessary clinical services.

The clinical case management model was developed in recognition of the fact case managers must often act as clinicians by providing direct services (Deitchman 1980; Lamb 1980; Harris and Bergman 1987). Kanter (1989) described clinical case managers as providing services in four broad areas, including several components in each area: (1) initial phase (engagement, assessment, planning); (2) environmental interventions (linkage with community resources, consultation with families and other caregivers, maintenance and expansion of social networks, collaboration with physicians and hospitals, advocacy); (3) patient interventions (intermittent individual psychotherapy, training in independent living skills, patient psychoeducation); and (4) patient–environmental interventions (crisis intervention, monitoring). Although the clinical activities specified in this model may also be practiced to varying degrees in the broker model, this model makes explicit the expectation that case managers are clinicians with skills in areas such as psychoeducation and psychotherapy (Lamb 1980).

In the 1970s, Stein and Test (1980) created a program designed as a community-based alternative to the hospital for persons with mental illness presenting for treatment. The original program that Stein and Test developed, called the Program for Assertive Community Treatment (PACT), was subsequently developed as a specialized care package to meet the needs of patients with more severe psychiatric impairments, usually characterized by either a diagnosis of severe and chronic psychosis or a pattern of high service use. Thus, this approach, commonly referred to as the assertive community treatment (ACT) model (also called "assertive continuous care teams"; Stein 1990), was designed to be a comprehensive treatment approach that went beyond the confines of either the broker or the clinical case management models.

ACT is delivered by a multidisciplinary team, usually consisting of a psychiatrist, a nurse, and at least two case managers. The basic tenets of the ACT model include (1) low patient to staff ratios (e.g., 10:1, rather than 30:1 or higher); (2) most services provided in the community (e.g., patients' homes, restaurants), rather than in the office; (3) caseloads shared across clinicians, rather than individual caseloads; (4) 24-hour coverage; (5) most services provided directly by the ACT team and not brokered out; and (6) time-unlimited service (Stein and Test 1980, 1985; Thompson et al. 1990; Test 1992). The low patient to staff ratio, the emphasis placed on treatment in patients' natural environment, and the preference for providing direct services rather than referring patients elsewhere reflect the ACT model's priority on providing practical supports in daily living, such as shopping, laundry, and transportation.

The success of the first controlled study of ACT (Stein and Test 1980; Test and Stein 1980), fueled by several successful replications of ACT (Mulder, unpublished manuscript, 1982; Hoult et al. 1983), has led to a large body of research devoted to this model. However, it should be noted that applications of the ACT model have often been adapted to meet the unique needs of specific patient populations, geographical settings, and State or local agencies. For example, Witheridge et al. (1982; Witheridge and Dincin 1985) described their adaptation of the ACT model to a highly recidivistic psychiatric population living in the inner city of Chicago, a program called Thresholds Bridge.

In addition to formal modifications of the ACT model such as the Thresholds Bridge program, applications of the model may vary from the original conceptualization because of a shift in the essential ingredients of an ACT program. For example, a survey of 20 experts in the ACT model indicated that only 58 percent believed 24-hour availability to be a "very important" ingredient of ACT (McGrew and Bond 1995), although such availability was a central tenet of the original PACT program (Stein and Test 1980). Finally, even with the best efforts, not all attempts to implement an ACT program are successful. This may be due partly to the difficulties inherent in exporting and importing model treatment programs (Bachrach 1988). Thus, not all ACT programs are the same, and differences in findings across studies may reflect variations in the model and the success of the implementation. This is also true of other case management models.

The intensive case management (ICM) model was developed to meet the needs of high service users (Shern et al. 1989; Surles et al. 1992). It emerged out of a growing recognition that many patients with severe psychiatric disorders could not be engaged in treatment using traditional case management practices, yet they consumed many of the most costly treatment services, such as emergency room visits (Surles and McGurrin 1987). To remedy this problem, the ICM model employs a low patient to staff ratio and provides assertive outreach and services in patients' natural environments as well as practical assistance in daily living skills. One distinction between the ACT and ICM models is that caseloads are shared in the former, but not in the latter, although some descriptions of ICM models refer to shared caseloads (e.g., Degen et al. 1990; Åberg-Wistedt et al. 1995). We are unaware of other features of the ICM model that distinguish it from ACT. For the sake of clarity, in the present review we refer to studies of ICM models that incorporate shared caseloads as ACT models.

Another influential approach to case management is the strengths model (Weick et al. 1989; Sullivan 1992). This model was developed in response to concerns that approaches to case management (and treatment in general) for persons with severe mental illness tend to overemphasize the limits and impairments associated with psychiatric illnesses at the cost of overlooking the personal assets that patients can harness toward achieving individual goals. Another concern that led to the strengths model was the lack of attention of other approaches to natural community supports that can be tapped to facilitate community integration.

The principles of the strengths model were summarized by Rapp (1993): (1) the focus is on individual strengths rather than pathology; (2) the case manager–patient relationship is primary and essential; (3) interventions are based on patient self-determination; (4) the community is viewed as an oasis of resources, not as an obstacle; (5) patient contacts take place in the community, not in the office; and (6) people suffering from severe mental illness can continue to learn, grow, and change.

A final model of case management is the rehabilitation model (Anthony et al. 1988, 1993; Boston University Center for Psychiatric Rehabilitation, n.d.). Similar to the strengths model, the rehabilitation model emphasizes the importance of providing case management services based on individual patients' desires and goals, rather than on goals defined by the mental health system. A unique feature of this model is its emphasis on assessing and remediating instrumental and affiliative skills that may promote community tenure and the attainment of personal goals.

"Case Management": A Misnomer?

In a recent discussion of the tasks of case management, Sledge et al. (1995) commented that a potential danger lies in "expecting too much from it [case management], and allowing it to substitute for the services themselves" (p. 1265). This cautionary note is significant because it points to the different perspectives and expectations about case management. For example, a recently completed survey regarding mental health case management indicated that the majority of providers agreed on only one mission for their programs: preventing hospitalization (66%; Ellison et al. 1995). The next most important goals of case management included improving quality of life (38.3%) and improving patient functioning (24.6%).

The term case management implies a set of tasks primarily devoted to referring patients to services and coordinating treatment. However, except for the broker model, all of the models we have described involve the direct provision of services to patients by the case manager.

Table 1. Features of different community care models

	Community care model					
Program feature	Broker case management	Clinical case management	Strengths	Rehabilitation	Assertive community treatment	Intensive case management
Staff to patient ratio	1:50(?)	1:30+	1:20–30	1:20–30	1:10	1:10
Outreach to patients	Low	Low	Moderate	Moderate	High	High
Shared caseload	No	No	No	No	Yes	No
24-Hour coverage	No	No	No	No	Often	Often
Consumer input	No	Low	High	High	Low	Low
Emphasis on skills training	No	Low	Moderate	High	Moderate(?)	Moderate(?)
Frequency of patient contacts	Low	Moderate	Moderate	Moderate	High	High
Locus of contacts	Clinic	Clinic	Community	Clinic/Community	Community	Community
Integration of treatment	Low	Moderate	Low(?)	Low(?)	High	High(?)
Direct service provision	Low	Moderate	Moderate	Moderate	High	High
Target population	SMI	SMI	SMI	SMI	SMI high service users	SMI high service users

Note.—(?) = area of model that is unclear; SMI = severely mentally ill.

Because of this apparent discrepancy, the term case management may be misleading (Stein 1990). The common goal of different models loosely subsumed under the rubric case management is to help patients survive and optimize their adjustment in the community. Therefore, we suggest referring to these approaches as models of community care, a term that we use interchangeably with case management in this review.

Common and Unique Features of Community Care Models

To facilitate the comparison of different models of community care, we have summarized each model in terms of a number of core characteristics, such as patient to staff ratio and outreach (see table 1). This summary is based on a combination of philosophy and practice. We have attempted to acknowledge ambiguity (indicated by a question mark) in areas where models are not clear, but we recognize that other features may be debated as well. In addition, this list is not exhaustive; many other areas might be used to distinguish different models (e.g., qualifications of staff, approach to supervision). We have elected to focus on the most salient characteristics.

Overall, the different models of community care can be divided into three broad types: standard case management (broker and clinical case management models), rehabilitation-oriented community care (strengths and rehabilitation models), and intensive comprehensive care (ACT and ICM models). In practice, the differences between models within each of these broad types of community care can be difficult to establish. For example, the broker services and the clinical case management models may appear similar because case managers rarely act purely as service brokers without employing clinical skills. Some States (e.g., Texas) have sought to mandate role functions delimiting case manager activity to nonpsychotherapeutic interventions, but these mandates have not eliminated conceptual ambiguities. Similar ambiguities may exist between the strengths and rehabilitation models and between the ACT and ICM models.

Research on Community Care Models

A large body of research has been devoted to case management over the past two decades, and the literature has been reviewed periodically. Typically, most reviews have either been selective overviews (Chamberlain and Rapp 1991; Holloway 1991; Rubin 1992) or have focused on the ACT model (Bond 1989; Olfson 1990; Test 1992; Bond et al. 1995*b*; Burns and Santos 1995; Scott and

Dixon 1995). More comprehensive reviews include Solomon (1992; 20 studies), Holloway et al. (1995; 24 studies), and Rapp (1995; 29 studies).

The results of even more studies have recently become available (we identified 75 studies of case management effects on outcomes). In addition, several studies have examined the effects of withdrawing or reducing case management services, and others have compared different case management approaches for special populations, such as persons with a dual diagnosis of severe mental illness and substance-use disorder or those who are homeless. The time is ripe for a new review of case management literature.

Scope of the Review

Our aim was to review the results of all research studies we could obtain that sought to evaluate the effectiveness of one or more models of case management. Relevant articles, presentations, reports to government granting agencies, and unpublished papers were identified through literature reviews, searches of computer data bases, attendance at conferences, our own knowledge of the literature, and contacts with other researchers in the field.

Research studies were included in the review if they met at least one of two inclusion criteria: (1) assessments were conducted at a followup point for two groups of patients receiving different models of community care (including studies comparing a case management model with another program or service); or (2) assessments were conducted at baseline and followup for patients receiving one model of case management ("pre-post" studies). Most of the studies meeting the first criterion included both baseline and followup assessments for both groups, although a few studies reported only followup data. These criteria eliminated single-group studies reporting outcomes at followup only and studies that had no followup data at all.

In addition to using these inclusion criteria, we excluded studies of case management that required the patient to be in contact with relatives or the relatives be willing to participate in the program (e.g., McFarlane et al. 1992). There is a long history of family-based interventions showing that home care is a viable and less costly alternative to psychiatric hospitalization for many severely mentally ill patients (Carse et al. 1958; Greenblatt et al. 1963; Pasamanick et al. 1967; Fenton et al. 1979). More recently, a wealth of evidence has documented that long-term family interventions that provide psychoeducation and support, teach relatives how to monitor the illness and reduce stress, tend to have lower relapses and rehospitalizations (Mueser and Glynn 1995). As home-based approaches to case management invariably involve meeting and working with relatives, the distinction between case management or community care and family therapy becomes blurred. Therefore, to retain the focus of this review on case management or community care, we elected to exclude studies with a main focus on family intervention.

Research Review

We located a total of 75 different studies of community care that met our criteria. A summary of design, contextual, and model characteristics of these studies is provided in table 2. About half the studies (32/75 or 43%) employed a "true" experimental design (i.e., random assignment of subjects to different treatment groups), about half (36/75 or 48%) were conducted in urban areas with populations of greater than 200,000, and most examined the ACT (44/75 or 59%) or ICM (16/75 or 21%) models. The median number of patients across the studies

Table 2. Characteristics of community care studies

	Number of studies	
Total number	75	
Experimental design		
Random assignment	32	
Quasi-experimental	18	
Pre-post	25	
Location		
Large urban (>200,000)	36	
Small urban (<200,000)	19	
Rural	8	
Multisite	12	
Case management model[1]		
Standard	7	
Assertive community treatment	44	
Intensive case management	16	
Strengths case management	3	
Rehabilitation case management	1	
Other	4	
	Median	**(Range)**
Number of patients	90	(15–873)
Percent schizophrenia/ schizoaffective disorder	66%	(26–100%)
Followup period	18 months	(3–60)
Attrition rate	17%	(0–53%)

[1]One study (Sands and Cnaan 1994) compared two equally intensive case management programs: assertive community treatment (ACT) and intensive case management (ICM). This study was included in this table as one of the ACT studies.

was 90, the median percentage of patients with schizophrenia or schizoaffective disorder was 66 percent, the median followup period was 18 months, and the median study attrition rate was 17 percent (attrition was coded as attrition from the study, including both program dropouts and nondropouts for whom no data were available).

The methodological characteristics and results of each study on a range of different domains are provided in table 3*a*–3*g* (random assignment studies) and table 4*a*–4*k* (quasi-experimental and pre-post studies). The findings of the different studies were coded by two of the authors (K.T.M. and S.G.R.), with a third author resolving discrepancies (G.R.B.). A few comments are in order regarding some of the domains summarized and how the coding was conducted. "Social adjustment" refers to the quality of social relationships, the ability to meet social role expectations, or social networks. "Quality of life" is defined as the patient's subjective satisfaction with different areas of living, such as housing, finances, relationships, and health. Other, more objective indices of quality of life were also measured, such as symptoms, time spent in jail, and time in the hospital. "Patient satisfaction" and "relative satisfaction" refer to satisfaction with treatment.

When multiple results for a single domain were reported, the findings were summarized based on the overall pattern (e.g., did most of the subscales of a measure favor one model?). Based on the descriptions provided in the reports, it was often difficult to distinguish between brokered and clinical case management. For this

Table 3*a*. Random assignment community care studies

Investigators	Marx et al. (1973)	Stein and Test (1980), Test and Stein (1980)	Mulder (1982)	Hoult et al. (1983)
Location	Madison, WI	Madison, WI	Kent County, MI	Sydney, Australia
Groups (*n*)	CTG (21) RUC (20) OUC (20)	ACT (65) S (65)	ACT (59) S (62)	ACT (60) S (60)
Inclusion criteria				
Severe mental illness	Yes	Yes	Yes	Yes
Prior hospitalization	Yes	No	Yes	No
Functional impairment	Yes	No	No	No
Other	20–45 yrs.	–	–	–
Schizophrenia or schizoaffective (%)	79	50	Unknown	50
Patient status				
Currently inpatient	Yes	No	–	No
Presenting for inpatient	No	Yes	–	Yes
Other (mixed)	No	No	Yes	No
Followup duration	29 months	1 year	30 months	1 year
Attrition (%)	2	13	Unknown	16
Results				
Time in hospital	CTG < RUC, OUC	ACT < S	ACT < S	ACT< S
Symptoms	CTG = RUC	ACT < S	–	Mixed
Social adjustment	CTG = RUC	ACT ≥ S	ACT > S	ACT = S
Housing stability	CTG > RUC, OUC	ACT > S	ACT > S	–
Jail/arrests	CTG > RUC, OUC	ACT = S	–	ACT = S
Substance abuse	–	–	–	–
Medication compliance	–	ACT > S	–	–
Quality of life	–	ACT > S	ACT > S	–
Vocational functioning	CTG > RUC, OUC	ACT ≥ S	ACT = S	ACT = S
Patient satisfaction	–	–	–	ACT > S
Relative satisfaction	–	ACT = S	–	ACT > S
Comment (footnote number)	1	2	–	–

Note.—See footnotes at end of table 3*g*.

Table 3*b*. Random assignment community care studies

Investigators	Franklin et al. (1987)	Bond et al. (1988)	Modrcin et al. (1988)	Jerrell and Hu (1989)	Bond et al. (1990)
Location	Houston, TX	Indiana (3 sites)	Lawrence, KS	San Jose, CA	Chicago, IL
Groups (*n*)	S (213) No S (204)	ACT (84) S (83)	S (23) SCM (21)	ACT, S (35 total)	ACT (45) DIC (43)
Inclusion criteria					
Severe mental illness	No	Yes	No	Yes	Yes
Prior hospitalization	Yes	Yes	No	Yes	Yes
Functional impairment	No	No	No	No	No
Other	–	–	All referrals to CMHC	–	–
Schizophrenia or schizoaffective (%)	65	75	61	83	67
Patient status					
Currently inpatient	–	–	–	–	–
Presenting for inpatient	–	–	–	–	–
Other (mixed)	Yes	Yes	Yes	Yes	Yes
Followup duration	1 year	6 months	4 months	2 years	1 year
Attrition (%)	36	21	51	Unknown	34
Results					
Time in hospital	CM > No CM	ACT < S (2 of 3 sites)	S = SCM	ACT = S	ACT < DIC
Symptoms	–	–	–	ACT = S	ACT < DIC
Social adjustment	–	–	Mixed	ACT = S	ACT = DIC
Housing stability	–	–	–	–	ACT ≥ DIC
Jail/arrests	–	ACT = S	–	–	ACT < DIC
Substance abuse	–	–	–	–	–
Medication compliance	–	ACT = S	SCM = S	–	–
Quality of life	CM = No CM	ACT = S	SCM ≥ S	ACT = S	ACT = DIC
Vocational functioning	CM > No CM	–	S = SCM	–	ACT = DIC
Patient satisfaction	–	–	–	–	ACT > DIC
Relative satisfaction	–	–	–	–	–
Comment (footnote number)	3	4	3, 5, 6	5, 7	8

Note.—See footnotes at end of table 3*g*.

reason, in tables 3 and 4 we coded both these types as standard case management.

Experimental study designs with random assignment provide a much stronger basis for making causal inferences. Therefore, we confine most of our comments in this review to the effects of case management in random assignment studies. However, we also make occasional references to the other studies summarized in table 4.

Results of Controlled Studies. Inspection of table 3*a*–3*g* reveals that the majority of studies compared a more intensive model of case management, such as ACT or ICM, to the less intensive, standard model. Most studies employed at lease one inclusion criterion in addition to severe mental illness to select a sample of patients who were high service users or who had marked impairments in social functioning or self-care skills. A number of studies examined the effects of case management on special populations, such as patients who were homeless, dually diagnosed, recently released from jail, or young and diagnosed with schizophrenia.

Our evaluation of the controlled research on models of community care was guided by several linked hypotheses. First, because some approaches to community care can be conceptualized as a reallocation of mental health services from the hospital to the clinic or community (e.g., ACT or ICM models), we expected that those models would be associated with lower hospitalization rates and greater housing stability. To the extent that arrests and time spent in jail by persons with severe mental illness are

Table 3c. Random assignment community care studies

Investigators	Bush et al. (1990)	Curtis et al. (1992)	Hampton et al. (1992)	Merson et al. (1992)	Morse et al. (1992)
Location	Atlanta, GA	New York, NY	Chicago, IL (2 sites)	London, England	St. Louis, MO
Groups (*n*)	ACT (14) S (14)	ICM (146) S (143)	S (83) ACT (82)	ACT (48) S (52)	ACT (52) S (64) DIC (62)
Inclusion criteria					
Severe mental illness	Yes	No	Yes	No	Yes
Prior hospitalization	Yes	No	Yes	No	No
Functional impairment	Yes	No	No	No	No
Other	–	< 3 hosps. in past 2 yrs.	Homeless/ homeless risk	No contact with psychiat. serv.	Homeless
Schizophrenia or schizoaffective (%)	86	38	42	38	30 (schizophrenia only)
Patient status					
Currently inpatient	–	Yes	Yes	–	–
Presenting for inpatient	–	No	No	–	–
Other (mixed)	Yes	No	No	Yes	Yes
Followup duration	1 year	35–52 months	1 year	3 months	1 year
Attrition (%)	Unknown	0	36 (see footnote 10)	15	43 (less in ACT)
Results					
Time in hospital	ACT < S	ICM > S	ACT = S	ACT < S	–
Symptoms	–	–	–	ACT ≤ S	ACT = S = DIC
Social adjustment	–	–	–	ACT = S	ACT = S = DIC
Housing stability	–	–	ACT > S 1 site ACT = S 1 site	–	ACT > S, DIC
Jail/arrests	–	–	–	–	–
Substance abuse	–	–	–	–	ACT = S = DIC
Medication compliance	ACT > S	–	–	–	–
Quality of life	–	–	–	–	–
Vocational functioning	–	–	–	–	–
Patient satisfaction	–	–	–	ACT > S	ACT > S, DIC
Relative satisfaction	–	–	–	–	–
Comment (footnote number)	5	9	10	6, 11	12, 13

Note.—See footnotes at end of table 3*g*.

partly due to symptom exacerbations, we also expected that community care would reduce these negative outcomes. Second, as ACT and ICM models involve closer monitoring of patients' clinical status than would otherwise be provided, we hypothesized that these models would result in better medication compliance and lower levels of symptomatology and substance abuse. Third, because most approaches to community care attempt to enhance a wide range of patients' adaptive functioning, we anticipated that these models would improve social functioning, quality of life, and both patients' and their relatives' satisfaction with treatment.

There are numerous methodological differences across the studies. For example, patient characteristics, duration of followup, outcome measures, and attrition rate can all have an important bearing on findings. Furthermore, the quality of model implementation and the methodological rigor undoubtedly varied even among the controlled studies. For example, most reports do not provide information on the reliability of the assessment

Table 3*d*. Random assignment community care studies

Investigators	Test (1992)	Lehman et al. (1993)	Godley et al. (1994)	Macias et al. (1994)	Marks et al. (1994)
Location	Madison, WI	Baltimore, MD	Rock Island, IL	Logan, UT	London, England
Groups (*n*)	ACT (75) S (47)	ICM (29) S (25)	ACT (25) S (23)	SCM + PR (20) PR (21)	ACT (92) S (97)
Inclusion criteria					
Severe mental illness	Yes	Yes	Yes	Yes	Yes
Prior hospitalization	No	No	Yes	No	No
Functional impairment	No	No	No	No	No
Other	Schiz., 18–30, < 1 yr. jail/hosp.	Dually diagnosed	Dually diagnosed	–	–
Schizophrenia or schizoaffective (%)	100	67	44	46	49
Patient status					
Currently inpatient	–	–	–	–	No
Presenting for inpatient	–	–	–	–	Yes
Other (mixed)	Yes	Yes	Yes	Yes	No
Followup duration	2 years	1 year	2 years	18 months	20 months
Attrition (%)	Unknown	13	3	17	Unknown
Results					
Time in hospital	ACT < S	ICM = S	ACT ≤ S	SCM + PR < PR	ACT < S
Symptoms	–	–	ACT = S	SCM + PR < PR	ACT ≤ S
Social adjustment	–	–	ACT = S	SCM + PR = PR	ACT ≥ S
Housing stability	–	–	–	–	–
Jail/arrests	ACT = S	–	–	–	–
Substance abuse	–	ICM = S	ACT ≤ S	–	–
Medication compliance	–	–	–	–	–
Quality of life	–	ICM = S	–	–	–
Vocational functioning	–	–	ACT = S	–	–
Patient satisfaction	–	–	–	SCM + PR = PR	ACT > S
Relative satisfaction	–	–	–	SCM + PR > PR	ACT > S
Comment (footnote number)	14	15	16	5, 17	18

Note.—See footnotes at end of table 3*g*.

instruments employed, or problems with implementing a specific model, and some researchers may choose not to publish null findings for certain domains. In addition, there may be questions about the comparability of staff members who provide the experimental versus control interventions (e.g., do they have comparable levels of training and experience?). We recognize that methods exist that would allow us to rate the methodological rigor of studies. However, such ratings are tedious to perform and difficult to interpret. For these reasons, and because of the length of our review, we chose not to formally rate the methodological adequacy of studies, although we occasionally allude to methodological differences that may account for discrepant findings.

Controlled Studies of ACT or ICM

For ease of display and interpretation, we summarized the results of ACT or ICM studies by tallying, for each outcome domain, the number of studies reporting that patients were either improved, no different, or worse than those in the less intensive comparison group. These results are listed in table 5. We focused on these studies because only three controlled studies of other models have been conducted (Franklin et al. 1987; Modrcin et al. 1988; Macias et al. 1994). Only one controlled study compared two models of equally intensive case management, that is, ICM and intensive consumer case management (Solomon and Draine 1995*b*); this study was omit-

Table 3*e*. Random assignment community care studies

Investigators	Muijen et al. (1994)	Rosenheck et al. (1994)	Åberg-Wistedt et al. (1995)	Essock and Kontos (1995; and personal communication)	Quinlivan et al. (1995)
Location	London, England	Multiple VA hospitals (10 sites)	Stockholm, Sweden	Connecticut (3 sites)	San Diego, CA
Groups (*n*)	CNT (41) GCN (41)	ACT (454) S (419)	ICM (20) S (20)	ACT (131) S (131)	ACT (30) S (30) No CM (30)
Inclusion criteria					
Severe mental illness	Yes	Yes	Yes	Yes	Yes
Prior hospitalization	Yes	Yes	No	Yes	Yes
Functional impairment	No	No	No	Yes	No
Other	–	–	–	–	–
Schizophrenia or schizoaffective (%)	83	50	88	67	68
Patient status					
Currently inpatient	Yes	Yes	–	–	–
Presenting for inpatient	No	No	–	–	–
Other (mixed)	No	No	Yes	Yes	Yes
Followup duration	18 months	2 years	2 years	18 months	2 years
Attrition (%)	Unknown	0	7.5	5	0
Results					
Time in hospital	CNT = GCN	ACT < S	ICM = S	ACT < S	ACT = S ACT < No CM
Symptoms	CNT = GCN	–	–	–	–
Social adjustment	CNT = GCN	–	ICM = S	–	–
Housing stability	–	–	–	ACT > S	–
Jail/arrests	–	–	–	–	–
Substance abuse	–	–	–	–	–
Medication compliance	–	–	–	–	–
Quality of life	–	–	ICM = S	ACT ≥ S	–
Vocational functioning	–	–	–	–	–
Patient satisfaction	CNT = GCN	–	–	–	–
Relative satisfaction	CNT = GCN	–	ICM > S	–	–
Comment (footnote number)	19	20	5, 21	14	–

Note.—See footnotes at end of table 3*g*.

ted from the summary of controlled ACT and ICM studies in table 5. The Marx et al. (1973) study of community treatment, which was a precursor to the ACT model, was included in this summary table, however. Reports of effects significant at $p < 0.05$ were used to code the results indicating improvement. Studies reporting marginally significant improvement were also coded as improved.

Following the traditional reviewing method used by other reviewers of the case management and ACT literature (e.g., Olfson 1990; Solomon 1992), we have used a "tally" or "box score" approach to summarize the number of studies with positive, null, or negative results in various outcome domains. Whereas meta-analysis is useful when a group of studies is relatively homogeneous (e.g., Bond et al. 1995*b*), it is more problematic when the program models, methods, and measures are as heterogeneous as in the current review. In addition, meta-analytic techniques require a substantially longer time to summarize findings than does a box score approach. For a field in

Table 3*f*. Random assignment community care studies

Investigators	Solomon and Draine (1995*a*)	Solomon and Draine (1995*b*)	Chandler et al. (1996)	Shern et al. (1996)
Location	Philadelphia, PA	Philadelphia, PA	California (2 sites)	New York, NY
Groups (*n*)	ACT (42) FCM (38) S (37)	ICCM (48) ICM (48)	ACT (217) S (222)	S (77) ICM + PR (91)
Inclusion criteria				
Severe mental illness	Yes	Yes	Yes	Yes
Prior hospitalization	Yes	Yes	No	No
Functional impairment	No	No	Yes	No
Other	Homeless, released from jail	–	Public assistance	Homeless
Schizophrenia or schizoaffective (%)	84	86	61	49 (psychotic)
Patient status				
Currently inpatient	–	–	–	–
Presenting for inpatient	–	–	–	–
Other (mixed)	Yes	Yes	Yes	Yes
Followup duration	1 year	2 years	1 year	2 years
Attrition (%)	53	6	Unknown	29
Results				
Time in hospital	ACT = FCM = S	ICCM = ICM	ACT ≤ S	ICM = S
Symptoms	ACT = FCM = S	ICCM = ICM	ACT = S	ICM < S
Social adjustment	ACT = FCM = S	ICCM = ICM	ACT = S	–
Housing stability	ACT = FCM = S	–	ACT = S	ICM > S
Jail/arrests	ACT = FCM = S	ICCM = ICM	ACT = S	ICM = S
Substance abuse	ACT = FCM = S	–	–	–
Medication compliance	–	ICCM = ICM	ACT = S	–
Quality of life	ACT = FCM = S	ICCM = ICM	ACT > S	ICM > S
Vocational functioning	–	ICCM = ICM	ACT ≥ S?	–
Patient satisfaction	–	ICCM = ICM	ACT > S?	–
Relative satisfaction	–	–	–	–
Comment (footnote number)	22	–	23	–

Note.—See footnotes at end of table 3*g*.

which studies are proliferating rapidly, we concluded that a box score approach was a suitable way to summarize the findings, although we welcome future meta-analytic examination of this body of research.

Overall, inspection of table 5 indicates that few studies found negative effects for ACT or ICM, and approximately equal numbers of positive effects and no differences were reported. Specific findings follow.

Time in Hospital. The most consistent effects of the ACT and ICM models were in the areas of reduced time spent in hospitals and improved housing stability. Of the 23 controlled studies that examined hospitalization time, 14 (61%) reported significant reductions compared to the control group. Some of the null findings can be understood by considering details of the studies. The studies by Jerrell and Hu (1989), Lehman et al. (1993), and Åberg-Wistedt et al. (1995) all had relatively small sample sizes ($n < 30$ per treatment group). Implementation problems were reported for one of the two sites in the Hampton et al. (1992) study and for the Fekete et al. (in press) study. The ACT's lack of effect on time in the hospital for the forensic psychiatric population that Solomon and Draine (1995*a*) studied is intriguing, but this is the only con-

Table 3*g*. Random assignment community care studies

Investigators	Morse et al. (1997)	Susser et al. (1997)	Lehman et al. (1997)	Fekete et al. (in press)
Location	St. Louis, MO	New York, NY	Baltimore, MD	Rural Indiana
Groups (*n*)	ACT, ACT + P, S (165 total)	CTI (48) S (48)	ACT (77) S (75)	ACT (78) S (75)
Inclusion criteria				
Severe mental illness	Yes	Yes	Yes	Yes
Prior hospitalization	No	No	Yes	No
Functional impairment	No	No	No	No
Other	Homeless, "not dangerous"	Homeless	Homeless	Poor utilization of CMH services
Schizophrenia or schizoaffective (%)	66	68 (schizophrenia only)	58	48
Patient status				
Currently inpatient	–	–	–	–
Presenting for inpatient	–	–	–	–
Other (mixed)	Yes	Yes	Yes	Yes
Followup duration	18 months	9 months	1 year	24 months
Attrition (%)	18	2	17	15
Results				
Time in hospital	–	–	ACT < S	ACT = S
Symptoms	ACT, ACT + P ≤ S 2 scales of BPRS	–	ACT ≤ S	ACT < S
Social adjustment	–	–	ACT = S	–
Housing stability	ACT > ACT + P, S	CTI > S	ACT > S	ACT < S
Jail/arrests	–	–	ACT < S	ACT = S
Substance abuse	ACT = ACT + P = S	–	ACT = S	–
Medication compliance	–	–	–	–
Quality of life	–	–	ACT ≥ S	ACT ≥ S
Vocational functioning	–	–	–	ACT = S
Patient satisfaction	ACT, ACT + P > S	–	–	ACT > S
Relative satisfaction	–	–	–	–
Comment (footnote number)	24	26	–	25

Note.—Abbreviations for terms and groups: ACT = assertive community treatment; BPRS = Brief Psychiatric Rating Scale (Overall and Gorham 1962); CM = case management; CMHC = community mental health center; CNT = community nursing team; CTG = community treatment group; CTI = critical time intervention; DIC = drop-in center; FCM = forensic case management; GCN = generic (less intensive) community nurses; ICCM = intensive consumer case management; ICM = intensive case management; OUC = other unit controls; P = paraprofessional community worker; PR = psychosocial rehabilitation; RCM = rehabilitation case management; RUC = research unit controls; S = standard case management; SCM = strengths case management; VA = Veterans Affairs. *Abbreviations for results:* > is "greater than"; < is "less than"; ≥ is "marginally greater than"; ≤ is "marginally less than"; = is "same as."

[1]Pre-ACT study; RUC and OUC remained in hospital.
[2]First ACT study; Phase I (see Stein and Test 1980, table 6*a* for Phase II).
[3]High attrition.
[4]ACT not fully implemented in one site; except for time in hospital, each site analyzed separately; 21% never entered study after randomization.
[5]Small sample size.
[6]Short followup.
[7]S had paraprofessional outreach.
[8]Higher retention in ACT (76%) than in DIC (7%).
[9]Studied less ill patients usually excluded from ICM or ACT programs.
[10]Implementation problems at one site led to high attrition (73%) and no differences.
[11]ACT-like team did not provide 24-hour coverage and had < weekly contact with patients.
[12]High dropout rate.
[13]Low percentage of schizophrenia.
[14]Preliminary report.
[15]Community support program demonstration project.
[16]See Godley et al. (1994); multisite, pre-post study ACT (table 4*l*).
[17]No pretests; 1-year followup used for interviews.
[18]Phase I (see Audini et al. 1994, table 6*a* for Phase II).
[19]Nursing team was not interdisciplinary.
[20]Effects strongest for high service users.
[21]ICM < S in emergency room units.
[22]Trend for ACT > FCM, S in jail.
[23]ACT < S at one site for short-term hospitalization (< 30 days), but no difference when hospitalized > 30 days; 1-year outcome of 3-year program.
[24]Service contacts: ACT, ACT + P > S.
[25]ACT fidelity low.
[26]See table 6*b* for followup.

Table 4*a*. Noncontrolled community care studies

Investigators	Muller (1981)	Witheridge et al. (1982)	Rapp and Chamberlain (1985)
Location	Birmingham, AL	Chicago, IL	Lawrence, KS
Research design	Quasi-experimental	Pre-post	Pre-post
Groups (*n*)	S (40) No S (32)	ACT (50)	SCM (19)
Inclusion criteria			
Severe mental illness	Yes	Yes	Yes
Prior hospitalization	No	Yes	No
Functional impairment	No	No	No
Other	–	–	–
Schizophrenia or schizoaffective (%)	77	Unknown	26
Patient status			
Currently inpatient	–	–	–
Presenting for inpatient	–	–	–
Other (mixed)	Yes	Yes	Yes
Followup duration	6 months (S) 12 months (No S)	1 year	6 months
Attrition (%)	11	18	Unknown
Results			
Time in hospital	–	Decrease	Decrease
Symptoms	Decrease	–	–
Social adjustment	–	–	–
Housing stability	–	–	–
Jail/arrests	–	–	–
Substance abuse	–	–	–
Medication compliance	–	–	–
Quality of life	–	–	–
Vocational functioning	–	–	–
Patient satisfaction	–	–	–
Relative satisfaction	–	–	–
Comment (footnote number)	1	–	2

Note.—See footnotes at end of table 4*k*.

trolled study of this population. The tendency for ACT or ICM to reduce time in the hospital in pre-post and quasi-experimental design studies is also evident from a review of table 4.

Only one controlled ACT or ICM study reported negative effects of ICM on time in the hospital (Curtis et al. 1992). Unique methodological features of the study may account for these discrepant findings: The study was conducted in a setting in which an ICM team was already serving patients with severe mental illness with a history of high service use. Patients eligible for the preexisting ICM team were automatically provided that treatment. The study included only patients who were not high service users (i.e., had no hospitalizations longer than 6 months and not more than three hospitalizations in the previous 2 years). In line with the focus on low service users, only 38 percent of the sample had schizophrenia. In contrast to Curtis et al. (1992), most ICM and ACT studies include primarily high service users. The findings of Curtis et al. suggest that ICM or ACT services do not lower time spent in the hospital for low service users, a conclusion consistent with the Rosenheck et al. (1994) multicenter study of ACT.

Housing Stability. Housing stability is closely linked to time spent in the hospital; therefore, as might be expected, case management improved housing stability in most studies. In 9 of 12 (75%) controlled studies, ACT or ICM

Table 4*b*. Noncontrolled community care studies

Investigators	Cutler et al. (1987)	Goering et al. (1988)	Bond et al. (1989)	Borland et al. (1989)	Wright et al. (1989)
Location	Portland, OR	Toronto, Canada	Chicago, IL	Spokane, WA	Seattle, WA
Research design	Quasi-experimental	Matched groups	Quasi-experimental	Pre-post	Pre-post
Groups (*n*)	No CM (10) S + SC (10) ICM (10)	RCM (82) S (82)	ACT + CH (46) ACT + PH (39)	ACT (72)	ACT (196)
Inclusion criteria					
Severe mental illness	Yes	Yes	Yes	Yes	Yes
Prior hospitalization	No	Yes	Yes	Yes	Yes
Functional impairment	No	Yes	No	No	No
Other	Schizophrenia	–	Homeless?	–	–
Patient status					
Currently inpatient	–	–	No	–	–
Presenting for inpatient	–	–	Yes	–	–
Other (mixed)	Yes	Yes	No	Yes	Yes
Schizophrenia or schizoaffective(%)	100	77 (psychotic)	79	99	75
Followup duration	1 year	2 years	4 months	5 years	4 years
Attrition (%)	Unknown	11	Unknown	11	24
Results					
Time in hospital	ICM = S + SC < No CM	–	ACT + CH = ACT + PH	Decrease	Decrease
Symptoms	ICM = S + SC, No CM	RCM = S	–	–	–
Social adjustment	ICM = S + SC, No CM	RCM > S	–	–	–
Housing stability	–	RCM > S	ACT + CH = ACT + PH	–	–
Jail/arrests	–	–	–	–	Decrease
Substance abuse	–	–	ACT + CH < ACT + PH	Decrease	–
Medication compliance	–	–	ACT + CH < ACT + PH	Increase	–
Quality of life	ICM = S + SC = No CM	–	–	–	–
Vocational functioning	–	RCM > S	–	–	–
Patient satisfaction	–	–	–	–	–
Relative satisfaction	–	–	–	–	–
Comment (footnote number)	2	–	3	4	4.5

Note.—See footnotes at end of table 4*k*.

improved housing stability or independence. The two studies that found no effects of ACT on housing stability were one site from the Hampton et al. (1992) study, which reported implementation problems, and the Chandler et al. (1996) study, which reported 1-year outcomes for a 3-year program. Fekete et al. (in press) reported the unusual finding that ACT patients had lower housing stability than patients who received standard case management. On the other hand, Fekete et al. also reported that patients receiving ACT reported more improvements both in their quality of life and their satisfaction with services. The authors interpreted the negative effects of ACT on housing stability as possibly due to greater efforts to find more suitable housing for these patients.

Time in Jail. In contrast to the positive effects of ACT or ICM on time in the hospital and housing stability/independence, only 2 of 10 studies reported reductions in time in jail. It is unclear why case management had such a negligible effect. Although persons with severe mental illness are more likely to be incarcerated (Appelbaum 1994), the base rate of time spent in jail may have been too low to detect a change in some of the study samples. Alternatively, ACT and ICM have been

Table 4*c*. Noncontrolled community care studies

Investigators	First et al. (1990)	Arana et al. (1991)	Biddle (1991)	Bigelow et al. (1991)
Location	East Chicago, IN	Baltimore, MD	Orangeburg, SC	Portland, OR
Research design	*Pre-post*	*Pre-post*	*Pre-post*	*Matched groups*
Groups (*n*)	ACT (139)	ACT (39)	ACT (69)	ACT (25) S (17)
Inclusion criteria				
Severe mental illness	Yes	Yes	Yes	Yes
Prior hospitalization	No	Yes	Yes	Yes
Functional impairment	No	Yes	No	No
Other	Homeless	–	Dually diagnosed	–
Patient status				
Currently inpatient	–	–	–	–
Presenting for inpatient	–	–	–	–
Other (mixed)	Yes	Yes	Yes	Yes
Schizophrenia or schizoaffective (%)	Unknown	61	74	60
Followup duration	Up to 27 months	6 months	Unknown	18 months
Attrition (%)	Unknown	18	25	Unknown
Results				
Time in hospital	–	Decrease	Decrease	ACT < S
Symptoms	–	–	–	ACT > S
Social adjustment	–	–	–	ACT > S
Housing stability	Increase	–	Increase	ACT > S
Jail/arrests	–	–	Decrease	–
Substance abuse	–	No change	–	–
Medication compliance	–	–	–	ACT = S
Quality of life	–	–	–	ACT > S
Vocational functioning	–	–	–	ACT = S
Patient satisfaction	–	–	–	–
Relative satisfaction	–	–	–	–
Comment (footnote number)	6	2	7, 8	9

Note.—See footnotes at end of table 4*k*.

designed as vehicles for providing clinical services that may require significant modification to address the different needs of patients who are prone to engage in illegal behavior.

A recent controlled study by Solomon and Draine (1995*a*) failed to find beneficial effects of ACT on homeless persons with severe mental illness recently released from jail. However, in a quasi-experimental study of mentally ill persons discharged from prison, Wilson et al. (1995; see table 4*k*) reported that patients who received ACT spent 60 percent fewer days in the hospital than patients who received standard care. This small study provides some encouragement that ACT services can be adapted to meet the unique needs of forensic psychiatric patients. More controlled research on this question is needed.

One controlled study reported that community treatment, a precursor to ACT, resulted in more time spent in jail than was experienced in the comparison treatment groups (Marx et al. 1973). However, both comparison groups in this study spent most of their time in the hospital and therefore were not exposed to the possible legal repercussions of unlawful behavior.

Symptoms. Some of the most important goals of ACT and ICM are to help patients deal with daily stressors they face in the community (e.g., problems with managing money, negotiating conflicts, making and attending appointments), to improve monitoring of symptoms, and to enhance medication compliance. An additional goal of some studies has been to decrease substance abuse, a problem experienced by about half of persons with a severe

Table 4*d*. Noncontrolled community care studies

Investigators	Bigelow and Young (1991)	Blaney et al. (1991)	Bond et al. (1991*a*)
Location	Portland, OR	British Columbia, Canada	Indiana (3 sites)
Research design	Matched groups	Pre-post	Quasi-experimental
Groups (*n*)	S (31) No CM (37)	ACT (25)	ACT (31) RG (23) S (43)
Inclusion criteria			
Severe mental illness	Yes	Yes	Yes
Prior hospitalization	Yes	No	Yes
Functional impairment	Yes	No	No
Other	–	–	Dually diagnosed, 18–45 years of age
Patient status			
Currently inpatient	–	–	–
Presenting for inpatient	–	–	–
Other (mixed)	Yes	Yes	Yes
Schizophrenia or schizoaffective (%)	36 (schizophrenia only)	48	70
Followup duration	9 months	6 months	18 months
Attrition (%)	Unknown	Unknown	42
Results			
Time in hospital	S < No CM	Decrease	ACT = RG = S
Symptoms	S < No CM	–	–
Social adjustment	S = No CM	–	–
Housing stability	S > No CM	–	ACT = RG = S
Jail/arrests	–	–	ACT = RG = S
Substance abuse	–	–	RG < S
Medication compliance	–	–	ACT = RG = S
Quality of life	S > No CM	–	ACT = RG = S
Vocational functioning	–	–	ACT = RG = S
Patient satisfaction	–	–	ACT = RG = S
Relative satisfaction	–	–	–
Comment (footnote number)	10, 11	2	7, 12

Note.—See footnotes at end of table 4*k*.

mental illness (Regier et al. 1990). From the perspective of the stress-vulnerability model of psychiatric disorders (Nuechterlein and Dawson 1984), stress reduction, symptom monitoring, medication compliance, and reduced substance abuse would all be expected to lower symptoms.

The controlled studies provide modest support for ACT or ICM in decreasing symptom severity. Among the 16 controlled studies that evaluated symptomatology, 8 (50%) reported significant reductions in symptoms (table 5). Although the findings suggest moderate effects of ACT or ICM on symptomatology, several reasons may explain why stronger effects were not found. First, severe but relatively stable symptoms are common among persons with severe mental illness, those persons who are most often targeted by ACT and ICM. Further reduction of symptoms may not be an attainable goal for many patients, even if stress and other liabilities are successfully contained. Second, symptom exacerbations are only one of many reasons why psychiatric patients are hospitalized; others include housing instability, legal incursions, lack of crisis services, and nonpsychiatric consequences of substance abuse (e.g., drunk and disorderly conduct). To the extent that reducing hospital use is a common goal of ACT and ICM, lowering symptoms is just one of many concerns to clinicians. Third, in contrast to hospitalization, symptomatology is relatively difficult to measure. There is a wide variability across studies in the instruments used to assess symptoms, with some studies including self-report mea-

Table 4*e*. Noncontrolled community care studies

Investigators	Bond et al. (1991*b*)	Edwards et al. (1991)	Fraser (1991)	Johnson (1991)
Location	Philadelphia, PA	Marion County, OR	Utah (3 sites)	Yakima, WA
Research design	Quasi-experimental	Quasi-experimental	Pre-post	Pre-post
Groups (*n*)	ACT (30) SrCM (10)	S (21) No CM (25)	ICM (71)	ICM (147)
Inclusion criteria				
Severe mental illness	Yes	Yes	Yes	Yes
Prior hospitalization	Yes	Yes	No	Yes
Functional impairment	No	No	No	Yes
Other	–	Dually diagnosed	Dually diagnosed, noncompliant	Dually diagnosed
Patient status				
Currently inpatient	–	–	–	–
Presenting for inpatient	–	–	–	–
Other (mixed)	Yes	Yes	Yes	Yes
Schizophrenia or schizoaffective (%)	64	81	59	54
Followup duration	2 years	1 year	> 1 year	> 1 year
Attrition (%)	25	24	41	28
Results				
Time in hospital	ACT = SrCM	S = No CM	Decrease	Decrease
Symptoms	–	S = No CM	–	–
Social adjustment	–	–	Increase	–
Housing stability	–	–	–	–
Jail/arrests	–	–	–	–
Substance abuse	–	S ≤ No CM	Decrease	No change
Medication compliance	–	–	–	–
Quality of life	–	–	–	–
Vocational functioning	–	–	–	–
Patient satisfaction	–	–	–	–
Relative satisfaction	–	–	–	–
Comment (footnote number)	13	7	7	7

Note.—See footnotes at end of table 4*k*.

sures and others using semistructured interviews. The lack of common assessments used in different studies limits our ability to speculate on why some studies reported differences in symptoms while others did not.

Medication Compliance. The effect of ACT or ICM on medication compliance is unclear because few studies have examined this domain. Four studies examined medication compliance, with two reporting improvements (Stein and Test 1980; Bush et al. 1990) and two reporting no changes (Bond et al. 1988; Chandler et al. 1996). The lack of research on medication compliance is intriguing, considering the wealth of evidence pointing to medication noncompliance as an important factor contributing to relapse and rehospitalization (Kane 1985; Corrigan et al. 1990). It is possible that some of the reduction in time spent in the hospital seen with ACT or ICM models is due to improved medication compliance resulting from better symptom monitoring and medication delivery. However, only meager evidence directly bears on this question, in part perhaps because medication compliance is difficult to measure reliably.

Substance Abuse. The data on the effects of ACT or ICM on substance abuse are also limited, with one study reporting improvements and five studies not finding any differences (table 5). Relatively little research has addressed this issue because recognition of the impor-

Table 4*f*. Noncontrolled community care studies

Investigators	Michigan Department of Mental Health (1991)	Tennessee Department of Mental Health and Mental Retardation (1991)	Detrick and Stiepock (1992)	Johnsen et al. (1992)
Location	Grand Rapids, MI	Memphis, TN	Northern Rhode Island	Cleveland, OH
Research design	Pre-post	Pre-post	Pre-post	Pre-post
Groups (*n*)	ACT (45)	ICM (159)	MTT (17)	ICM (15)
Inclusion criteria				
Severe mental illness	Yes	Yes	Yes	Yes
Prior hospitalization	No	No	No	Yes
Functional impairment	No	No	No	No
Other	Dually diagnosed	Dually diagnosed, legal problems	Dually diagnosed	Dually diagnosed
Patient status				
Currently inpatient	–	–	–	–
Presenting for inpatient	–	–	–	–
Other (mixed)	Yes	Yes	Yes	Yes
Schizophrenia or schizoaffective (%)	41	Unknown	Unknown	100
Followup duration	18 months	Unknown	18 months	Unknown
Attrition (%)	23	Unknown	Unknown	13
Results				
Time in hospital	Decrease	Decrease	Decrease	Decrease
Symptoms	–	–	–	–
Social adjustment	–	Increase	–	–
Housing stability	Increase	–	Unknown	–
Jail/arrests	–	–	Decrease	–
Substance abuse	No change	Decrease	Decrease	Decrease
Medication compliance	Increase	–	–	Increase
Quality of life	–	–	–	–
Vocational functioning	–	–	No change	–
Patient satisfaction	–	–	–	–
Relative satisfaction	–	–	–	–
Comment (footnote number)	7, 10	7	2, 8	2, 7

Note.—See footnotes at end of table 4*k*.

tance of substance abuse has only recently emerged. The first controlled study of ACT or ICM to assess substance abuse was that by Morse et al. (1992).

It is interesting to note that of the six controlled studies of ACT or ICM that measured changes in substance abuse (Morse et al. 1992, 1997; Lehman et al. 1993, 1997; Godley et al. 1994; Solomon and Draine 1995*a*), only two focused exclusively on patients with a dual diagnosis (Lehman et al. 1993; Godley et al. 1994). Both of these studies had small sample sizes ($n < 30$ per condition). Godley et al. (1994) reported significant reductions in substance abuse for patients receiving ACT over 2 years, whereas Lehman et al. (1993) found no effect for ACT over 1 year (table 3*d*). We address the question of whether specialized services for patients with a dual diagnosis may be critical for the ACT or ICM models in a later section (see "Specialization on ACT and ICM Teams").

Social Adjustment. Neither ACT nor ICM appear to have a beneficial effect on social functioning, defined by the quality of social relationships, role functioning, or social networks. Only 3 of 14 (21%) studies reported pos-

Table 4*g*. Noncontrolled community care studies

Investigators	Rössler et al. (1992)	Surles et al. (1992)	Drake et al. (1993)	Durrell et al. (1993)
Location	Mannheim, Germany	New York, NY	Rural New Hampshire	Darby, PA
Research design	Matched groups	Pre-post	Pre-post	Pre-post
Groups (*n*)	CM (162) No CM (162)	ICM (170)	ACT + IDDT (18)	ICM (84)
Inclusion criteria				
Severe mental illness	Unclear	Yes	Yes	Yes
Prior hospitalization	No	No	No	Yes
Functional impairment	No	Yes	No	No
Other	–	–	Dually diagnosed	Dually diagnosed, noncompliant
Patient status				
Currently inpatient	Yes	–	–	–
Presenting for inpatient	No	–	–	–
Other (mixed)	No	Yes	Yes	Yes
Schizophrenia or schizoaffective (%)	59	57	100	84
Followup duration	130 weeks	18 months	4 years	18–24 months
Attrition (%)	Unknown	39	Unknown	Unknown
Results				
Time in hospital	CM = No CM	Decrease	–	Decrease
Symptoms	–	Decrease	–	Decrease
Social adjustment	–	Increase	–	–
Housing stability	–	Decrease	–	–
Jail/arrests	–	Decrease	–	?
Substance abuse	–	Decrease	Decrease	Decrease
Medication compliance	–	–	–	–
Quality of life	–	Increase	–	–
Vocational functioning	–	–	–	–
Patient satisfaction	–	–	–	–
Relative satisfaction	–	–	–	–
Comment (footnote number)	–	–	2, 4	8

Note.—See footnotes at end of table 4*k*.

itive effects of ACT or ICM on social functioning (Test and Stein 1980; Mulder 1982; Marks et al. 1994). These findings are of interest considering the often stated goal of improving social functioning in intensive community care models (Stein and Test 1980; Surles et al. 1992).

The apparent lack of effect of ACT and ICM on social functioning in the community may reflect their emphasis on directly assisting patients to meet immediate needs and their relative deemphasis on the formal incorporation of rehabilitation methods. As we shall discuss in more detail later, applying social learning-based interventions (e.g., social skills training; Liberman et al. 1989) in the context of ACT or ICM might result in greater improvement in social functioning (see "Specialization on ACT and ICM Teams").

Vocational Functioning. Few ACT or ICM studies have examined vocational functioning, with three studies finding positive effects and five reporting no benefits. Examining the results of the three positive studies further suggests that the vocational outcomes are probably not the result of the ACT or ICM per se.

Two ACT studies reporting positive vocational outcomes included a range of vocational outcomes (e.g., sheltered workshops) in their measure of vocational success (Marx et al. 1973; Stein and Test 1980). On the basis

Table 4*h*. Noncontrolled community care studies

Investigators	Hornstra et al. (1993)	McGurrin and Worley (1993)	Santos et al. (1993*a*, 1993*b*)	Wasylenki et al. (1993)	Dharwadkar (1994)
Location	Kansas City, MO	2 Pennsylvania counties	Rural South Carolina	Toronto, Ontario, Canada	Dandenong, Victoria, Australia
Research design	Matched groups	Matched groups	Pre-post	Pre-post	Pre-post
Groups (*n*)	ACT (112) S (112)	ICM (113) S (70)	ACT (52)	ACT (59)	ACT (50)
Inclusion criteria					
Severe mental illness	Yes	Yes	Yes	Yes	Yes
Prior hospitalization	Yes	No	Yes	No	Yes
Functional impairment	No	Yes	No	No	No
Other	Schizophrenia	–	Schizophrenia	Homeless	–
Patient status					
Currently inpatient	–	–	–	–	–
Presenting for inpatient	–	–	–	–	–
Other (mixed)	Yes	Yes	Yes	Yes	Yes
Schizophrenia or schizoaffective (%)	100	82	100	93	–
Followup duration	Average 11 months	3 years	12–20 months	9 months	1 year
Attrition (%)	Unknown	25 (S only)	2	17	0
Results					
Time in hospital	ACT = S	ICM < S	Decrease	–	Decrease
Symptoms	–	–	–	Decrease	Decrease
Social adjustment	–	–	–	Increase	–
Housing stability	–	–	Increase	Increase	–
Jail/arrests	–	–	–	–	–
Substance abuse	–	–	–	–	–
Medication compliance	–	–	–	–	–
Quality of life	–	–	–	–	–
Vocational functioning	–	–	–	Increase	–
Patient satisfaction	–	–	–	–	–
Relative satisfaction	–	–	–	–	–
Comment (footnote number)	14	15	–	–	–

Note.—See footnotes at end of table 4*k*.

of these two promising early studies, Test (1992) postulated that ACT studies could increase employment outcomes over the long term. Findings from Test's (1995) long-term followup study of 122 young adults with schizophrenia randomly assigned to ACT or usual services found no differences in vocational outcomes at 7 years. Test's reanalysis of data from early and late cohorts led her to conclude that an intensive vocational component is a necessary condition for significant improvement in the employment arena.

This interpretation is consistent with the third study reporting positive effects of ACT on employment (Chandler et al. 1996). This study reported findings from two ACT programs. One site reported no vocational advantages for the ACT group, while the second reported substantial effects on employment. The second site, however, invested heavily in vocational interventions, such as establishing transitional employment opportunities in the community. Together, these three studies are consistent with Bond's (1992) conclusion that in order to have a significant impact on employment, a mental health program must have a substantial vocational component devoted to that end.

Quality of Life. Overall, there appeared to be a moderate effect of ACT or ICM on improving quality of life. Further inspection of the controlled studies suggests that

Table 4*l*. Noncontrolled community care studies

Investigators	Godley et al. (1994)	Hambridge and Rosen (1994)	Lehman et al. (1994)	Sands and Cnaan (1994)
Location	Illinois (3 sites)	Sydney, Australia	Maryland and Ohio (4 urban sites)	Philadelphia, PA
Research design	Pre-post	Pre-post	Quasi-experimental	Matched groups
Groups (*n*)	ACT (120)	ACT (64)	NS (359) IS (302)	ACT (30) ICM (30)
Inclusion criteria				
Severe mental illness	Yes	Yes	Yes	Yes
Prior hospitalization	Yes	Yes	Yes	No
Functional impairment	No	No	No	No
Other	Dually diagnosed	–	–	–
Patient status				
Currently inpatient	–	–	Yes	–
Presenting for inpatient	–	–	No	–
Other (mixed)	Yes	Yes	No	Yes
Schizophrenia or schizoaffective (%)	46	83	62	90
Followup duration	2 years	1 year	1 year	1–12 months
Attrition (%)	23	0	3–14	0
Results				
Time in hospital	Decrease	Decrease	NS = S	ACT = ICM
Symptoms	No change	Decrease	S ≥ NS	–
Social adjustment	Increase	Increase	–	ACT = ICM
Housing stability	–	–	–	ACT = ICM
Jail/arrests	–	–	–	–
Substance abuse	Decrease	–	–	ACT = ICM
Medication compliance	–	–	–	ACT > ICM
Quality of life	–	–	NS = S	–
Vocational functioning	No change	–	–	ACT = ICM
Patient satisfaction	–	–	–	–
Relative satisfaction	–	–	–	–
Comment (footnote number)	16	–	17	18

Note.—See footnotes at end of table 4*k*.

changes in quality of life may be related to changes in hospitalization and housing stability. All six controlled studies reporting positive effects of ACT or ICM on quality of life also found either reduced hospital time, lower symptoms, or more stable housing (Stein and Test 1980, table 3*a*; Mulder 1982; Essock and Kontos 1995, and personal communication; Chandler et al. 1996; Lehman et al. 1997; Fekete et al., in press). Among the six ACT or ICM studies finding no effects on quality of life, only two reported significant improvements in time in the hospital (Bond et al. 1988, 1990), while four failed to show effects (Jerrell and Hu 1989; Lehman et al. 1993; Åberg-Wistedt et al. 1995; Solomon and Draine 1995*a*). Thus, there is some support for the hypothesis that improvements in hospitalization and housing stability lead to higher quality of life. This interpretation is also consistent with findings from the McKinney Homeless Demonstration Project, in which several programs were found to improve housing stability and quality of life in persons with severe mental illness (Center for Mental Health Services 1994).

Patient and Relative Satisfaction. There is some evidence suggesting that ACT or ICM programs result in higher patient satisfaction and, to a lesser extent, higher satisfaction among patients' relatives. Six out of seven studies reported higher patient satisfaction, while two out

Table 4*j*. Noncontrolled community care studies

Investigators	Felton et al. (1995)	Jerrell and Ridgely (1995)	McGrew et al. (1995)
Location	Bronx, NY	San Jose, CA	Northeast Indiana (6 sites)
Research design	Quasi-experimental	Quasi-experimental	Pre-post
Groups (*n*)	ICM ICM + CPS ICM + PP (170 total)	S (45) Pre-AA (39) SST (48)	ACT (212)
Inclusion criteria			
Severe mental illness	Yes	Yes	Yes
Prior hospitalization	No	Yes	Yes
Functional impairment	No	No	No
Other	–	Dually diagnosed	–
Patient status			
Currently inpatient	–	–	–
Presenting for inpatient	–	–	–
Other (mixed)	Yes	Yes	Yes
Schizophrenia or schizoaffective (%)	Unknown	Unknown	65
Followup duration	2 years	18 months	18 months
Attrition (%)	18	Unknown	26
Results			
Time in hospital	ICM = ICM + CPS = ICM + PP	Unknown	Decrease
Symptoms	ICM = ICM + CPS = ICM + PP	SST, S < Pre-AA	–
Social adjustment	ICM = ICM + CPS = ICM + PP	SST > Pre-AA S?	Increase
Housing stability	ICM = ICM + CPS = ICM + PP	S = Pre-AA SST > Pre-AA	No change
Jail/arrests	ICM = ICM + CPS = ICM + PP	–	Increase
Substance abuse	–	SST < S = Pre-AA	–
Medication compliance	–	–	No change
Quality of life	ICM + CPS > ICM = ICM + PP	S ≥ Pre-AA	Increase
Vocational functioning	–	–	No change
Patient satisfaction	–	–	–
Relative satisfaction	–	–	–
Comment (footnote number)	19	20	–

Note.—See footnotes at end of table 4*k*.

of four studies reported higher satisfaction for relatives with ACT or ICM (table 5). Although the number of studies is small, this trend indicates that increasing community-based services and decreasing the use of the hospital or clinic as the locus of treatment may be associated with higher satisfaction with mental health services.

Reducing or Withdrawing ACT or ICM Programs. The initial philosophy of ACT specified that once ACT services were initiated, they should continue to be provided, rather than shift patients to a less intensive service (Stein and Test 1980). However, McGrew and Bond's (1995) survey of ACT experts indicated that only 55 percent considered the "no close" policy to be a critical ingredient of ACT programs. To address this question, five studies have examined what happens when ACT or ICM services are reduced in intensity or withdrawn altogether. These studies are summarized in table 6*a* and 6*b*.

In Stein and Test's (1980) study, after 1 year of ACT, patients were transitioned back to standard case management services for an additional 16 months. At study termination (28 months), these patients were compared with patients who had received standard case management services for the full 28 months. A wide range of assessments indicated that gains made for patients in ACT over the first year dissipated rapidly, and by the end of the study

Table 4*k*. Noncontrolled community care studies

Investigators	Nelson et al. (1995)	Wilson et al. (1995)	Drake et al. (1997)	Meisler et al. (in press)
Location	Waterloo Region, Canada	Vancouver, British Columbia, Canada	Washington, DC	Wilmington, DE
Research design	Pre-post	Quasi-experimental	Quasi-experimental	Pre-post
Groups (*n*)	ICM (66)	ACT (26) S (33)	ICM (158) S (59)	ACT (114)
Inclusion criteria				
Severe mental illness	Yes	No	Yes	Yes
Prior hospitalization	No	Yes	No	No
Functional impairment	No	No	No	No
Other	–	In ACT 3–4 weeks before released from jail	Homeless, dually diagnosed	Homeless
Patient status				
Currently inpatient	–	–	–	–
Presenting for inpatient	–	–	–	–
Other (mixed)	Yes	–	Yes	Yes
Schizophrenia or schizoaffective (%)	Unknown	39 (schizophrenia)	50	Unknown
Followup duration	1 year	18 months	18 months	12–48 months (mean, 31 months)
Attrition (%)	Unknown	Unknown	14	Unknown
Results				
Time in hospital	Decrease	–	ICM = S	Decrease
Symptoms	–	–	ICM = S	–
Social adjustment	–	–	ICM = S	–
Housing stability	–	–	ICM > S	Increase
Jail/arrests	–	ACT < S	–	–
Substance abuse	–	–	ICM ≤ S	Decrease
Medication compliance	–	–	–	
Quality of life	–	–	ICM = S	–
Vocational functioning	–	–	ICM = S	–
Patient satisfaction	–	–	–	–
Relative satisfaction	–	–	–	–
Comment (footnote number)	–	10	21	22

Note.—Abbreviations for terms and groups: AA = Alcoholics Anonymous; ACT = assertive community treatment; CH = crisis house; CM = case management; CPS = consumer peer specialists; ICM = intensive case management; IDDT = integrated dual diagnosis treatment; IS = integrated standard case management; MTT = mobile treatment team; NS = non-integrated standard case management; PH = purchased house; PP = paraprofessional; Pre-AA = Pre-Alcoholics Anonymous Groups; RCM = rehabilitation case management; RG = educational supportive reference groups; S = standard case management; SC = social center; SCM = strengths case management; SrCM = senior case management; SST = social skills training. *Abbreviations for results*: > is "greater than"; < is "less than"; ≥ is "marginally greater than"; ≤ is "marginally less than"; = is "same as."

[1]Patients increased in meeting "unmet service needs" in social adjustment, housing stability, and vocational functioning. Mental health care, case management, and environmental support also improved.
[2]Small sample size.
[3]Short followup period.
[4]Long followup period.
[5]Number of jail events decreased, but not days in jail.
[6]Implementation study.
[7]Community support program demonstration project.
[8]No statistical analyses.
[9]Brief followup for interviews.
[10]Low percentage of schizophrenia.
[11]Brief followup for interviews; < 3 months for interviews.
[12]Implementation problems at one site; no analysis on substance abuse done for ACT.
[13]ACT + SrCM had similar patient–staff ratios.
[14]Low hospitalization rate (23%) suggests floor effect on time in hospital.
[15]Preliminary report.
[16]Fourth site studied but 2-year followup data not obtained.
[17]Data on NS collected at the beginning of implementation of S.
[18]All ACT clients lived in "supportive residences," which monitored medication; admission criteria to ACT and ICM programs were somewhat different.
[19]Report based on 104 patients (61%) with complete data.
[20]Implementation problems with S (originally ACT) condition.
[21]Both ICM and S improved on symptoms, quality of life, and social functioning; "institutional housing" significantly lower for S.
[22]Followup only data on employment and arrests/jail.

Table 5. Results of controlled studies of active community treatment (ACT) and intensive case management (ICM) on different domains of outcome

	Effect of ACT or ICM for studies		
Outcome Domain	Improved	No difference	Worse
Time in hospital	14	8	1
Housing stability	9	2	1
Jail/arrests	2	7	1
Medication compliance	2	2	0
Symptoms	8	8	0
Substance abuse	1	5	0
Social adjustment	3	11	0
Vocational functioning	3	5	0
Quality of life	7	6	0
Patient satisfaction	6	1	0
Relative satisfaction	2	2	0

the ACT patients and the standard services patients were virtually identical. These findings were sufficiently strong to cause many proponents of ACT to express skepticism about whether ACT services could ever be withdrawn from persons with severe mental illness.

McRae et al. (1990) evaluated the effects of switching 72 patients from ACT to standard case management. Patients had received ACT services for 5 years (Borland et al. 1989) and were followed in standard case management for 2 more years. The findings showed that the number of days in a hospital increased significantly ($p < 0.05$) when patients were switched to less intensive standard community care. It is noteworthy that McRae et al. (1990) concluded that the change in ACT services produced no effect on days in the hospital, based on a more stringent $p < 0.01$ level and employing a two-tailed, rather than one-tailed t-test (Bond 1990).

Audini et al. (1994) reported the only controlled study of withdrawing ACT services. After 20 months of ACT (Marks et al. 1994), 66 patients were randomly assigned either to continue to receive ACT or to receive standard case management for 15 additional months. Followup assessments indicated no differences between the groups in time in the hospital or social functioning, in contrast to the first phases of the study, in which ACT patients spent less time in the hospital and had better social functioning (Marks et al. 1994, table 3*d*). The ACT patients had fewer symptoms of anxiety and depression, but did not differ in other symptoms. However, both patients' and relatives' satisfaction with services was higher for the ACT team. Audini et al. (1994) reported a number of implementation problems with this phase of the study, including low morale on the ACT team and some patients and relatives who continued to maintain contact with the ACT team after being randomly assigned to standard case management.

A fourth study of withdrawing ACT-like services focused on an intervention specifically designed to improve housing stability of homeless persons with mental illness, Critical Time Intervention (CTI; Susser et al. 1997). In contrast to ACT and ICM, CTI was designed to provide intensive case management for a limited period of time, with the expectation that appropriately timed services should be sufficient to stabilize housing in these patients. Patients were randomly assigned to CTI or standard services for 9 months. After the 9 months, the patients resumed receiving standard services for an additional 9 months. As hypothesized, over the 9-month followup period (9–18 months), patients who had received CTI continued to have more stable housing than patients who received standard services. Effects on other outcomes were not reported.

Finally, Salyers et al. (in press) evaluated the effects of transferring 107 ACT patients who had made substantial progress toward independent living and who were using low levels of ACT services to a less intensive, step-down case management service. This service was provided by the same agency, with the team working closely with the original ACT teams, and included other important features of ACT, such as shared caseloads and frequent meetings with a multidisciplinary treatment team. Before transfer, patients had been receiving ACT services for an average of 6.5 years, and they were followed up after transfer for an average of 2.7 years. Fifteen of the 107 patients transferred to step-down case management were judged to need more intensive services (e.g., due to relapse) and were transferred back to ACT; in the data analysis, these patients were included in the step-down group. Followup evaluations indicated that after transfer, patients received even fewer services on step-down than before they began receiving ACT services. Despite receiving fewer services, the transferred patients did not experience increased hospitalization, and they continued to show improvements in functioning.

The results of these five studies raise some interesting questions. The Susser et al. (1997) study suggests that time-limited intensive community care may be feasible for homeless persons with severe mental illness. On the other hand, the studies by Stein and Test (1980), McRae et al. (1990), and Audini et al. (1994) indicate that withdrawal of ACT for high service users was associated with an erosion of treatment gains, especially regarding time in the hospital. One difference between the Susser et al. study and the others was population. The homeless per-

Table 6*a*. Community care reduction or withdrawal studies

Investigators	Stein and Test (1980)	McRae et al. (1990)	Audini et al. (1994)
Location	Madison, WI	Spokane, WA	London, England
Research design	Random assignment	Pre-post	Random assignment
Groups (*n*)	After 1 year of S: S (65) After 1 year of ACT: S (65)	After 5 years of ACT: S (72)	After 20 months of ACT: S (33)
Inclusion criteria			
Severe mental illness	Yes	Yes	Yes
Prior hospitalization	Yes	Yes	Yes
Functional impairment	No	No	No
No primary substance abuse	Yes	Yes	Yes
Other	–	–	–
Schizophrenia or schizoaffective (%)	50	99	30
Followup duration	16 months	2 years	15 months
Attrition (%)	13	12	12
Results			
Time in hospital	ACT = S	Increase	ACT = S
Symptoms	ACT = S	–	ACT ≤ S
Social adjustment	ACT = S	–	ACT = S
Housing stability	ACT = S	–	–
Jail/arrests	–	–	–
Substance abuse	–	–	–
Medication compliance	ACT = S	–	–
Quality of life	ACT = S	–	–
Vocational functioning	ACT ≥ S	–	–
Patient satisfaction	–	–	ACT > S
Relative satisfaction	–	–	ACT > S
Comment (footnote number)	1	2	3

Note.—See footnotes at end of table 6*b*.

sons Susser et al. studied may not have been high service users compared to the patients in the other ACT studies. In line with this, Shern et al. (1996) commented that the homeless persons with severe mental illness in their sample were not high service users and that ICM was successful in stabilizing housing, but had no effect on time in the hospital (table 3*f*).

The study by Salyers et al. (in press) provides strong evidence that patients on ACT whose use of services is relatively low and who have made significant gains in functioning can be transferred to less intensive services without untoward effects. The critical difference between the groups studied by Salyers et al. (in press) and those studied by Stein and Test (1980), McRae et al. (1990), and Audini et al. (1994) is that in the Salyers et al. study, only patients who were judged to not need intensive case management services were transferred to less intensive care, whereas in the other studies all patients were transferred. This study suggests that some patients receiving ACT services can be transferred to less intensive service over time. The questions are which patients can be transferred and under what conditions, and when ACT (or ICM) can be decreased. Salyers et al. (in press) selected patients for transfer based on both low use of ACT services and significant progress toward independent living. It is possible that either of these criteria alone might be an indicator of whether an ACT patient can be transferred to less intensive service. Further research is needed to address the question of which patients receiving ACT are the best candidates for a reduction in service intensity.

Work is needed to identify patient characteristics that predict a favorable outcome following withdrawal of ACT services, as well as the critical program components that allow successful transfers to take place. An important feature of the Salyers et al. (in press) study was that the clinicians on the step-down service were in close contact with the ACT team, and some contact between patients and ACT staff was possible after transfer. Some of the difficulties Audini et al. (1994) encountered when transferring patients from ACT to standard services might have been

Table 6*b*. Community care reduction or withdrawal studies

Investigators	Salyers et al. (in press)	Susser et al. (1997)
Location	Grand Rapids, MI	New York, NY
Research design	Quasi-experimental	Random assignment
Groups (*n*)	ACT (128) SD (107)	After 9 months of S: S (48) After 9 months of CTI: S (48)
Inclusion criteria		
Severe mental illness	Yes	Yes
Prior hospitalization	No	No
Functional impairment	No	No
No primary substance abuse	–	No
Other	SD clients transferred from ACT to less intensive services	Homeless
Schizophrenia or schizoaffective (%)	58	68
Followup duration	Average 2.7 years	9 months
Attrition (%)	0	2
Results		
Time in hospital	No change	–
Symptoms	–	–
Social adjustment	–	–
Housing stability	–	CTI > S
Jail/arrests	–	–
Substance abuse	–	–
Medication compliance	–	–
Quality of life	–	–
Vocational functioning	–	–
Patient satisfaction	–	–
Relative satisfaction	–	–
Comment (footnote number)	4	5

Note.—Abbreviations for terms and groups: ACT = assertive community treatment; CTI = critical time intervention; S = standard case management; SD = step-down case management team. *Abbreviations for results:* > is "greater than"; < is "less than"; ≥ is "marginally greater than"; ≤ is "marginally less than"; = is "same as."

[1]Phase II (see Stein and Test, 1980, table 3*a* for Phase I).
[2]Phase II (see Borland et al. 1989, table 4*b* for Phase I).
[3]Phase II (see Marks et al. 1994, table 3*d*, for Phase I); implementation and morale problems.
[4]Patients transferred from ACT to SD after showing improvement in independent living skills and low level of ACT service use.
[5]Phase II (see Susser et al. 1997, table 3*g* for Phase I).

averted if more attention had been paid to ensuring a close continuity of care over the transfer period, including more permeable boundaries between the ACT and standard service providers.

A related issue these studies raise is whether ACT fosters dependency (Estroff 1981). ACT's emphasis on providing direct assistance to patients in meeting their daily needs may have to be reconsidered if the final goal is to develop greater self-sufficiency. There is a natural tension between meeting immediate needs and teaching patients skills for meeting their own needs. While some patients have little capacity to learn new skills and may need intensive case management services to meet their needs over the long term, others may be capable of such learning. It is plausible that a more formal incorporation of techniques in social skills training (Liberman et al. 1989; Bellack et al. 1997) into ACT would help patients develop the requisite skills to permit less intense community care services. This goal would be attractive both to administrators, who must choose how to spend limited mental health service resources, and patients, who value greater independence.

Specialization on ACT and ICM Teams. Despite the clear benefits of ACT and ICM on reducing hospitalizations and stabilizing housing, their lack of effect on social and vocational functioning is of concern. Indeed, problems in these domains are some of the defining characteristics of the mentally ill population. If models of intensive community care are to improve the lives of persons with major mental illnesses, they will have to demonstrate more success than simply helping patients stay out of the hospital. Bond's (1992) observation that vocational outcomes tend to improve only in programs that provide special vocational services may apply to the broader range of psychosocial outcomes.

With respect to vocational outcomes, controlled studies indicate that supported employment approaches (Wehman and Moon 1988) successfully increase competitive employment for persons with severe mental illness (e.g., Gervey and Bedell 1994; Bond et al. 1995*a*; Drake et al. 1996). Supported employment approaches assume that most patients are capable of competitive employment, deemphasize the importance of lengthy prevocational assessment in favor of rapid job attainment, and provide follow-along supports (e.g., counseling to cope with stress) to help patients retain jobs or seek new ones. Often, but not always, supported employment services are integrated with clinical management by including an employment specialist on the treatment team (Becker and Drake 1994). Incorporating specialized supported employment services into ACT or ICM teams may improve vocational outcomes, as Chandler et al. (1996) reported.

Numerous studies have also provided evidence that social skills training is an effective strategy for improving the social adjustment in this population (Dilk and Bond 1996). Skills training techniques are based on the assumption that acquiring new skills requires repeated behavioral rehearsals to the point where desired behaviors become automatic under specific conditions (Bellack et al. 1997). Such learning is unlikely to take place in the absence of focused training, which may explain why ACT and ICM have no effect on social functioning. At the same time, without specific programming, generalizing social skills from the training environment to the natural setting can be quite limited (Mueser et al. 1995). Developing special expertise in skills training on ACT or ICM teams, coupled with providing patients frequent opportunities to practice specific skills in the community may be an ideal combination for improving the social functioning of persons with severe mental illness.

Another focus of increased attention in recent years has been the effect of ACT or ICM on patients with a dual diagnosis of severe mental illness and substance-use disorder. Although only a few controlled studies have been conducted (Lehman et al. 1993; Godley et al. 1994), positive results from several quasi-experimental or pre-post studies suggest beneficial effects (Fraser 1991; Tennessee Department of Mental Health and Mental Retardation 1991, table 4*f*; Detrick and Stiepock 1992; Johnsen et al. 1992; Drake et al. 1993, 1997; Durrell et al. 1993). However, not all studies have reported positive effects of ACT or ICM for patients with a dual diagnosis (Johnson 1991; Michigan Department of Mental Health 1991; Lehman et al. 1993). These findings suggest that ACT and ICM may be most effective in reducing substance abuse when it is provided by a team with special training in integrated mental health and substance abuse treatments. More research on this topic is needed.

Controlled Studies of Other Community Care Models

Very few controlled studies of other community care models have been conducted. Two studies reported some positive effects of the strengths model (Modrcin et al. 1988, table 3*b*; Macias et al. 1994, table 3*d*). However, these studies have some limitations. Both studies included small sample sizes ($n < 30$ per treatment group). The followup period for Modrcin et al. was only 4 months, and this study also had a very high attrition rate (51%). Macias et al. lacked pretests on the dependent measures. Although these two studies offer some hope for the strengths model, more controlled research is needed to reach any conclusions.

Each of the three remaining controlled studies examined a different model of community care: standard case management (Franklin et al. 1987), community nursing teams (Muijen et al. 1994), and critical time intervention for homelessness (Susser et al. 1997). The findings of Franklin et al. are of some interest because they reported that standard case management had negative effects on time spent in the hospital over 1 year (see table 3*b*). A longer followup from the same sample (Dozier et al. 1993) also found that patients who received case management spent more time in the hospital over 1 to 4 years than patients who received no case management. This study has been interpreted as a challenge to the widespread belief that standard case management is more beneficial and cost-effective than no case management (Franklin 1988).

The surprising results of Franklin et al. (1987) are in contrast to a smaller controlled study (Quinlivan et al. 1995) in which standard case management resulted in less time in the hospital than no case management (ACT resulted in the least time in the hospital). Franklin et al.'s results are also at variance with two noncontrolled studies

that reported that standard case management resulted in less time in the hospital (Bigelow and Young 1991; Nelson et al. 1995) or did not differ when compared to no case management (Rössler et al. 1992). A variety of hypotheses may account for the higher hospitalization rate of patients who received standard case management in Franklin et al. (1987); for example, the unavailability of decent, community-based resources such as housing could have influenced more patients to seek out the hospital as a living environment (Drake and Wallach 1988). Alternatively, if aftercare programs conducted sufficient outreach to patients receiving no case management, as described in Franklin et al., no differences in hospital time might be expected. Regardless of the reasons for this anomalous finding, no other studies have reported negative effects for standard case management compared to none.

Comparison of Case Management Models

We would like to provide a synthesis of the comparative effectiveness of the community care models most widely practiced, but available research provides little guidance in this area. Almost all of the controlled studies have compared the ACT or ICM models with "practice as usual," with only two small studies examining the strengths model (Modrcin et al. 1988; Macias et al. 1994) and few studies evaluating other models. We feel it is premature at this time to directly compare the effectiveness of different models of community care.

It may be helpful, however, to view the emergence of different models as a natural, evolutionary process in the care of persons with severe mental illness over the past several decades. Before deinstitutionalization there was no need for case management, as most patients were in the hospital where custodial care was provided. As patients returned to the community, the broker model was developed as a strategy to connect them to the necessary treatment and rehabilitation resources. The complexities of this role soon became evident, as did the recognition that case managers needed a variety of clinical skills to effectively engage and assess patients and selectively intervene and refer them for treatment, ushering into practice the clinical case management model.

The combination of the broker and clinical case management models was effective for many persons with mental illness, but was insufficient to meet the needs of patients who were more severely ill, especially those who were high service users. The ACT and ICM models were developed to switch the locus of treatment from the hospital back into the the community by encouraging clinicians to engage and provide services for patients in their natural living environments. The success of these programs at reducing time in the hospital is evident from this review. However, despite the rehabilitative goals of ACT (Stein and Test 1980) and ICM (Surles et al. 1992), their impact on psychosocial functioning was weak. The strengths and rehabilitation approaches to community care were innovations aimed at improving those areas of functioning not affected by the more intensive approaches. It remains to be seen whether these models have been successful in achieving these aims.

Thus, historical analysis suggests that different community care models were developed to address the emerging needs of persons with severe mental illness. A more important goal than evaluating which model is best may be to determine which model is best for whom or to explore whether hybrid models can be developed to meet multiple needs currently addressed by different models.

Economic Considerations

Our review has focused primarily on the effects of community care models on hospitalization, clinical outcome, social and vocational functioning, and well-being. Despite the potential for programs to improve these outcomes, economic factors are often pivotal in the decision to implement novel treatment approaches. It is beyond the scope of this article to review the data on cost-effectiveness of case management programs and to discuss the methodological complexities of cost analysis (see Weisbrod 1983; Clark et al. 1994; Rosenheck et al. 1994). However, because of the importance of this topic, we briefly touch on some of the core issues of cost-effectiveness.

Most studies of cost-effectiveness of community care models have focused on ACT, with many reporting net savings (e.g., Weisbrod et al. 1980; Bond et al. 1988; Nelson et al. 1995; Quinlivan et al. 1995) and a few finding no difference (e.g., Jerrell and Hu 1989). A number of factors may account for the variable effects of community care on cost across different models and settings. Patient and contextual characteristics may be especially critical. There is a general consensus that ACT-like models are most effective when provided to patients who have a history of high service use (Rosenheck et al. 1994), since such approaches can reallocate the use of expensive hospital-based services to less costly, community treatment.

However, Häfner and an der Heiden (1989) provided data from Germany suggesting that community-based care may be more expensive for psychiatric patients who are severely disabled. Organizational and financing structures, not just the nature and intensity of the services themselves, contribute to some of the cost differences among the different types of programs. There is no inher-

ent reason why community-based treatment should be less expensive than institution-based care for patients who are severely mentally ill; the high cost of hospital care relative to community care in the United States reflects the historical priority placed on the reimbursement of procedures typically provided in the hospital and the deemphasis of preventive or maintenance care. As these payment structures are modified in the pursuit of a more efficient health care system, the economic advantages favoring one approach over another may change. Furthermore, with the trend toward community treatment and decreasing time in the hospital, it may be more difficult in the future to demonstrate cost savings from ACT or ICM programs.

A related contextual factor is the availability of different services in a particular setting. It may be difficult or impossible to demonstrate that community care is less costly than the status quo in environments with limited access to mental health services (e.g., Franklin et al. 1987). Indeed, from a clinical and quality of life perspective, effective community care in such a system might result in higher rather than lower service use and costs (Surles et al. 1992). The dual roles of the clinician in limiting service use and providing access to necessary services may differ from one model to another (Sledge et al. 1995), and differences in the relative costs of programs may vary accordingly.

A final issue relevant to cost analysis is the theory underlying the expected cost savings (Clark and Fox 1993). Models with the primary goal of reducing hospital use by providing more intensive services in patients' natural environment, such as ACT and ICM, may be expected to produce cost savings almost immediately (provided patients are high service users), although the savings may be contingent upon continued care for long periods of time. On the other hand, models that emphasize rehabilitation may take longer to help patients develop the requisite skills or build on personal strengths (i.e., strengths and rehabilitation models). These approaches do not offer the immediate cost savings associated with more intensive approaches to community care, but they offer the promise (as yet undemonstrated) of fostering greater independence. Thus, the timeframe for a cost analysis is critical, with the optimal followup period determined by the theory of the cost savings.

Future Directions

Substantial advances have been made in recent years in evaluating the effects of different approaches to community care, especially ACT and ICM. Despite this progress, we have a limited understanding of the factors responsible for successful or unsuccessful applications of these models. Research on community care models needs to evaluate the fidelity of model implementation to explore possible determinants of positive and negative outcomes.

Methods for measuring the activity of case managers have been developed (Hargreaves et al. 1984; Brekke and Test 1987, 1992), but few studies comparing different models of community care have employed these measures. Direct measures of clinician activity are crucial to demonstrate that a particular model has been successfully implemented (Teague et al. 1995). Differences in outcome across studies could be due to variations in the degree of fidelity to which a model was implemented. At this point, we do not even know that the behavior of clinicians performing the ACT, ICM, or strengths models can be reliably distinguished.

Another advantage to measuring model fidelity is that it will permit us to explore whether specific activities of clinicians are related to patient outcomes. In addition to the importance of distinguishing between different models of community care, fidelity measures may be useful in identifying the critical ingredients of models in multisite studies with varying degrees of implementation fidelity (McGrew et al. 1994; Ryan et al. 1994). For example, certain aspects of the strengths model may be especially important to producing favorable outcomes in certain settings.

It is becoming increasingly clear that there is no single community care model that is equally appropriate across all service settings. For example, the resources and characteristics of rural communities place different demands on service systems compared to urban communities. Because of smaller numbers of patients served, rural case management teams typically are smaller, have less frequent staff meetings, and have less crisis coverage than their urban counterparts (Santos et al. 1993*a*; Fekete et al., in press). Social isolation, poverty, social stigma, and lack of qualified mental health workers have all been reported as particularly significant barriers in rural areas. In addition, rural patients may differ diagnostically from urban patients (Dottl and Greenley 1997). Thus, research is needed to determine the impact of geography on the critical ingredients of community care.

An additional research question concerns the mechanisms underlying the effects of community care models. As previously discussed, medication compliance is one possible factor that could lead to reduced hospitalizations for the ACT or ICM models. However, little work has been conducted to evaluate the effect of ACT or ICM on medication adherence or to explore whether medication mediates reductions in hospitalization. Studies by Pescosolido et al. (1995) and Pescosolido (1991) offer a broader conceptual framework, based on social network

theory, for understanding the effects of case management on the outcome of psychiatric illness. It is hypothesized that a critical function of case management is to reconstruct a community for patients by forming a set of professionally based social networks and social supports, thereby creating a safety net. Through the combined effects of social support and social control, these networks shape the likelihood that patients will adhere to treatment recommendations. The role of case management, according to this theory, is similar to the buffering role of the family in the expanded stress-vulnerability-family coping model of psychiatric disorders (Mueser and Glynn 1995). The social network theory leads to explicit, testable hypotheses regarding the relationship between characteristics of the social network (e.g., density of case managers, relationship between patient and case manager) and outcome (see Pescosolido et al. 1995).

Another research topic is the patient–case manager alliance (Goering and Stylianos 1988). In recent years the potential importance of this alliance in predicting the outcome of psychotherapy has been the focus of much research (Horvath and Symonds 1991; Horvath and Luborsky 1993). The concept of alliance, developed originally for psychoanalytic psychotherapy, was broadened by Bordin (1976) to refer to three aspects of the therapeutic alliance: (1) the perceived relevance of the cognitive-behavioral *tasks* involved in therapy; (2) agreement as to the *goals* of the intervention; and (3) the strength of the *interpersonal bonds* between the therapist and patient (e.g., mutual trust and acceptance). In contrast to psychodynamic formulations, Bordin's concept is that alliance is necessary to accomplish the goals of intervention, but it does not act as a vehicle of change in and of itself.

Some intriguing research suggests that the patient–case manager alliance may be an important factor in mediating a favorable response to community care for persons with severe mental illness. Two studies of patient preferences and satisfaction suggest that patients value the quality of their relationship with their case manager more than they value structural aspects (e.g., frequency of contacts) of the community care program (Solomon and Draine 1994; McGrew et al., in press). Several studies have also shown that alliance ratings completed after participating in a community care program are related to outcomes at the end (Gehrs and Goering 1994; Neale and Rosenheck 1995; Solomon et al. 1995).

Fewer studies have evaluated the predictive relationship between alliance and outcome in patients with severe mental illness. Priebe and Gruyters (1993) reported that some patient ratings of the helping relationship with the case manager (e.g., understanding, criticism) predicted hospitalizations and changes in work over 20 months. Although this study and others appear consistent with the hypothesis that the patient–case manager alliance contributes to the outcome of community care programs, these findings must be interpreted with caution. Premorbid social functioning is a robust predictor of outcome in severe psychiatric disorders (Zigler and Glick 1986; Mueser et al. 1990). Furthermore, frequency of social contacts and apathy/anhedonia after the onset of schizophrenia are also important predictors of outcome in schizophrenia (Strauss and Carpenter 1977; Harrow et al. 1986; Rajkumar and Thara 1989; Jonsson and Nyman 1991; Sayers et al. 1996). Associations between the working alliance and outcome in this population could reflect the poorer prognosis of patients with more severe social deficits, rather than effects due to the helping alliance. Additional work is needed in this area, both in terms of refining the measurement of patient–case manager alliance and evaluating its impact on the outcome of community care approaches.

A final area for future research is the relationship between specific patient characteristics and response to either different models or facets of community care. Rather than focus research on a "horse race" between two or more competing models, it may be more fruitful to attempt to predict who will respond best to which model or which components of a given model. Such an approach appreciates the diversity of the population of persons with severe mental illness and recognizes the need for a variety of different approaches to community care. We are optimistic that efforts aimed at understanding how to better tailor models of community care to meet specific patient needs will be more fruitful in the years to come than trying to demonstrate the overall superiority of any one model.

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Announcement

The **6th World Congress of the World Association for Psychosocial Rehabilitation** will be held at the CCH-Congress Centrum Hamburg, Hamburg, Germany, May 2-5, 1998. This Congress entitled "Challenges and Demands of Psychosocial Rehabilitation in a Changing World" is supported by the World Health Organization.

The Congress will include plenary sessions, workshops, symposia, poster sessions, and expert panel groups focusing on the following subjects: practice and therapy, research, economics, social policy, and self-help movements (for those who have been in therapy and their relatives).

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