Immediate and Enduring Outcomes: A Systematic Review of Mental Health Case Management (1990-2007)

By

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Abstract

The purpose of this project is to gather and interpret literature pertaining to the development and utilization of case management in the community care of persons with severe and persistent mental illness (bipolar disorder, schizophrenia, and other psychotic disorders). Using Fink's (2005) method for conducting a descriptive review, I was able to identify the historical roots of mental health case management models and collect, analyze, and synthesize case management literature in determining the efficacy of current models, based on the enduring outcomes associated with those models. Assertive and clinical case management models were associated with improved functioning, decreased substance use, and increased engagement with community services. Assertive models were also associated with increased satisfaction with services and housing stability and the clinical model was associated with increased cost savings. The authors of five studies on the strength-based model did not generate enough data to make generalizations about the research findings.

Acknowledgements

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Chapter One

Introduction

The purpose of this project is to conduct a literature search and analysis of current mental health case management (MHCM) models utilized when caring for persons diagnosed with a severe and persistent mental illness (SPMI). MHCM models were designed to target the health and social access requirements that emerged for mental health patients after they were discharged from asylums and institutions (Davis, 2006). Case managers (CM), predominantly nurses or social workers, were tasked with assisting clients to attend appointments with physicians, psychiatrists and other health care providers, as well as negotiating for social services such as social welfare, housing, occupational rehabilitation and recreational supports.

Nurse case managers also assume clinical responsibilities such as administering oral and injectable medication, monitoring symptoms and medication efficacy, providing supportive and situational counseling and attending to the co-morbidities common to this population (Worley, 1997a). Additional tasks are dependent on the particular CM model chosen by the health centre or authority, i.e., broker case management, clinical case management, strength-based case management or case management within an assertive community treatment team. This introductory chapter includes the historical context of community and institutional care leading to deinstitutionalization, the evolution of mental health case management and the outcomes expected from different MHCM models.

Any MHCM model comes with a set of well-documented stakeholder expectations, some of which are contradictory. Hospital administrators seek fewer admissions and shorter bed stays; psychiatrists expect treatment compliance and

symptom management; landlords, employers and social agencies expect “normalized” behaviour; and clients, families and significant others expect a return to pre-morbid levels of functioning within supportive housing, education and vocational services. In-patient psychiatric staff demand speedy discharges, yet “best practice” rehabilitative care plans may require longer periods of hospitalization to maximize psycho-education and ensure stabilization of symptoms. At the same time, repeated health care budget cuts have resulted in trimming all services to provide care for only the most seriously ill.

Psychiatrists are autonomous practitioners who treat clients in creative ways and therefore may have quite varied expectations for MHCM activities. Some psychiatrists are very involved in pharmaceutical research and may see medication compliance as a top priority for MHCM. Other psychiatrists may believe that treatment compliance is secondary to the need for case managers to establish a therapeutic and trusting rapport that will eventually support treatment compliance and psychosocial education. Others may focus primarily on finding supportive housing and finances for clients, with medication adherence a secondary concern.

Case managers are expected to provide housing for those clients unable to live independently and support their ability to stay there, yet housing availability is often tied to the client’s ability to budget money provided through disability benefits. Housing that is subsidized financially or has extra care staff may be owned and/or operated by the health authority, mental health associations, not-for-profit organizations, religious organizations, and private owners. Different operators have different criteria for admission and eviction, and navigating through these often-scattered resources can be

enhanced by the knowledge that CMs have of funding agencies and the relationships they establish with the landlords.

Four MHCM models will be discussed in this paper, each with well-documented expectations for client and systems outcomes. The research data on hospital bed utilization and cost effectiveness for each model are often reported but outcomes based on specific nursing actions or client and stakeholder satisfaction, quality of life, autonomy, and other indicators of health and well being are less available. The proposed analysis will allow me to articulate MHCM roles within the four models and the outcomes necessary to evaluate them. I also plan to illuminate the roles and responsibilities of clients, nurses and healthcare systems necessary for MHCM activities to be consistent, health promoting, ethical and evidence-based. This exploration starts with a view of case management as the role emerged following deinstitutionalisation.

Mental Health Case Management in Historical Context

MHCM is a relatively new construct, initially developed to meet the challenges of clients discharged from state and provincial mental institutions, and later to aid in the early discharge of clients from acute care facilities. Through documented history, authors have detailed the challenges and benefits of providing care to the mentally ill in community and institutional settings (Carrier & Kendall, 1997; Davis, 2006). Case management is but the latest chapter documented through centuries of change in the care and confinement of the mentally ill.

Prior to the industrial revolution of the 1700s, the people of England and much of Europe tolerated the presence of the mentally ill in communities provided they were not too “troublesome”. Individuals who did cause trouble were driven from the town, placed

on ships bound for other countries or otherwise disposed of. For the most part, the mentally ill in colonial USA were readily “cared” for in their local communities. Those who could continue to work in largely rural communities were able to carry on in relative isolation. Those who were too ill to work were locked up in family basements or kept in attics or cages on their family estates, while the homeless were sold to the lowest bidder paid to provide care. Others were consigned to jails if they were found to be too dangerous to wander at large (Levine, 1981).

In the 1800s, few options were available for providing care to mentally ill persons in North America and Great Britain (Carrier & Kendall, 1997; Davis, 2006; Worley, 1997b). The wealthy were cared for at home or in privately run facilities. The poor were consigned to workhouses and jails, and a lucky few were admitted to facilities run by religious and charitable organizations. It was thanks to the nineteenth century political activism of crusaders such as Dorothea Dix in the United States that the miserable plight of poorer patients was finally addressed. Britain’s passage of the County Asylum Act in 1808 started a global shift towards the taxation of counties and municipalities to finance the construction of mental “asylums”. This building boom began in 1808 in Britain, 1836 in Canada (New Brunswick) and 1850 in the USA and was mirrored by the creation of like services in other countries (Wong, 2005).

Ideology and Treatment in the 20th Century

Though political will was used to coerce communities to create institutional settings for mental health care, there was no such will to provide guidelines for appropriate financing for adequate staffing, professional oversight, or to initiate clinical activities (Carrier & Kendall, 1997; Worley, 1997b). The often remotely situated

facilities quickly became over-crowded, under-staffed and poorly supervised, resulting in care that was more custodial than clinical.

The judicial nature of involuntary and forcible confinement sometimes led to hospitalizations that were often based on social and cultural mores rather than defined mental illness. For example, women who were promiscuous or unwilling to assume culturally defined roles were at risk of being forcibly institutionalized until they “came to their senses”. In some cases, admissions to mental asylums served the personal and financial advancement of family members, when non-biased professionals failed to assess the patient’s competence (Carrier & Kendall, 1997).

These inadequate conditions persisted until a number of factors eventually led to federal involvement and responsibility for persons in mental institutions. Franklin D. Roosevelt started a social welfare movement in the USA during the Great Depression of 1930-1939 in which the government assumed increasing responsibility for helping society at large (Worley, 1997b). Screening American soldiers for active duty during World War II revealed that 12 of every hundred examined were unfit for duty due to psychological problems and it became apparent that those housed in mental asylums constituted only a fraction of the mentally ill in the general population.

Policy makers in Great Britain recognized that a segment of the population could benefit from limited admission for psychiatric care under voluntary conditions. Great Britain opened the Maudsley Hospital to non-certified patients in 1923 and by 1948, 59 percent of patients admitted fit this criterion (Carrier & Kendall, 1997). The recognition of mental illness as having a treatable component encouraged the institution of

psychiatric units within general medical facilities, where a short stay and brief treatment often led to increased functioning on discharge.

The media played no small part in the call for health care reform of asylums. Books such as The Snake Pit (Ward, 1946), The Shame of the States (Deutch, 1949) and One Flew Over the Cuckoo's Nest (Kesey, 1962) presented powerful portrayals of the deplorable conditions in the institutions of their time, leading to the political will and legislation required to address the misery of those incarcerated. In the USA, the congressional creation of The Joint Commission on Mental Illness and Health in 1955 followed the novels by Ward and Deutch, while J. F. Kennedy's signing of the Mental Retardation Facilities and Community Mental Health Centers Construction Act in 1963 followed Kesey's (1962) novel (Worley, 1997).

Finally, treatment of those suffering from psychosis changed dramatically during the 1950s and 1960s with the discovery of the antipsychotic drug Chlorpromazine (CPZ), leading some to believe that the days of institutionalization would soon be over. Chemotherapeutic agents replaced dubiously useful therapies, such as ice water baths, insulin shock therapy and lobotomy, leading to the emptying of many psychiatric beds in chronic and acute care wards and the discharge of many persons with serious and persistent mental illness (SPMI) into the community.

Serious and Persistent Mental Illness (SPMI)

The literature frequently refers to the need for MHCM primarily for clients diagnosed with SPMI: those persons diagnosed with psychosis and/or major affective disorders (Davis, 2006; Manoleas, 1996). Consistent with this, Schultz and Greenley (1995) define SPMI as reserved for persons who have a significant mental illness lasting

longer than one year, with symptoms causing significant dysfunction in social, recreational, and occupational endeavors. Clients with SPMI tend to be heavy users of provincial hospitals, walk-in clinics, emergency departments and crisis services. Alternatively, many are homeless or have co-occurring disorders, such as mental handicaps, cognitive dysfunction, addiction or conduct disorders, often with a forensic history (Worley, 1997a).

SPMI may be viewed as an operational construct developed by professionals and health administrators, consistent with the availability of public treatment programs, in which a decision is made to give or withhold treatment (Davis, 2006; Worley, 1997c). In this way, SPMI is used as a service and functional definition for clients who require long term coordination of care; counseling for situational crises (relationship skills, stress management, budgeting, problem-solving, etc.), addictions, and cognitive deficits; and assistance in accessing social, financial, occupational, and recreational resources (Davis, 2006, p. 133). This broad description of the most seriously ill mental health clients fits well with a case management mandate to provide clinical follow up and community rehabilitation to clients previously housed and treated in mental care facilities.

Deinstitutionalisation

Deinstitutionalisation is the process of removing patients from institutional care and placing them within community or family-based settings (A Dictionary of Public Health, 2007). Since the 1950s and 1960s, administrators have emptied long-standing asylums and institutions of those diagnosed with a mental illness. This move was originally promoted by the appalling conditions and poor care visited on the patients, as well as the cost savings foreseen with a less professional model of care. Although the

deinstitutionalisation movement also displaced other institutionalised populations, such as the elderly and clients with mental disabilities, deinstitutionalization here refers to the coordinated attempt by municipal, provincial and federal governments to remove long-term patients from mental health facilities and place them in less restrictive environments (e.g., non-institutional housing) in the community.

Bachrach (1997) extended the definition of deinstitutionalisation to encompass responsibility for providing discharged clients with alternative services. She described the process as occurring in three stages: (a) discharging of institutionalized clients to less restrictive environments, (b) blocking of new patients from admission to the institution, and (c) the provision of psychiatric and support services to non-institutionalized persons in the community.

Davis (2006) discusses the early years of deinstitutionalisation as a time of confusion, poorly coordinated care and poor outcomes for clients (homelessness and incarceration). The initial savings of deinstitutionalisation were rapidly replaced by the upwardly spiraling cost of lengthy admissions to more expensive inpatient units. Over 32,000 institutional beds were eliminated in Canada between1960 and 1976, while less than 5,000 psychiatric beds were added in general hospitals. Despite the “miracle” of psychiatric medications heralding a vision of successful community care, it soon became apparent that without community resources and trained personnel, clients were being readmitted in order to gain treatment or they were incarcerated. As world attention shifted to the poor outcomes for deinstitutionalized clients (e.g., funding cutbacks, homelessness, increased drug use, medication non-adherence, etc.) there was increased interest in

finding solutions to enhance community care. MHCM was thought to be one such solution.

Case Management

In order to understand fully the development and implementation of MHCM, it is necessary to gain clarity about how MHCM functions within the health care context. Webster's New Millennium Dictionary of English (2003) defines case management as the planning and implementation of a course of action with the health professional being responsible for ensuring that all health-promoting activities are carried out. The Case Management Society of America (CMSA) outlines numerous case management roles, including coordination, assessment, planning, hands-on care and advocacy for an individual's health care needs (CMSA, 2007). Goering and Wasylenki (1996) state, "both coordination and direct service provision are required for meeting the needs of the severely mentally ill" (p. 312) and such services should be developed and delivered in conjunction with the client's personal goals. Outreach (i.e., going to the client in the community) is considered a necessary function in any comprehensive service.

MHCM is traditionally targeted towards formerly institutionalized patients of state or provincial hospitals and community clients diagnosed with SPMI (Manoleas, 1996; Worley, 1997). The case manager engages in relationship building, psychosocial education, medication and symptom monitoring, and assists clients in accessing frequently decentralized services and supports. Case managers (CMs) attempt "to secure needed services for an individual from a patchwork of poorly coordinated and under funded services either operated by, or in contract to, public entities" (Manoleas, 1996, p. 5). Through advocacy and flexible practice, CMs help clients meet individual needs, by

accessing services that they and community support groups perceive as desirable (Goering & Wasylenki, 1996).

Although general practitioners and psychiatrists engage in MHCM, other professionals and paraprofessionals with appropriate clinical skill and knowledge of the resources required by persons with SPMI generally assume the role. According to Davis (2006), “there is some consensus that it (case management) refers to a role - rather than a particular professional background or discipline - where the focus is on linkage with resources and coordination of care, not necessarily on direct provision of services” (p. 132). Despite the “brokerage” connotation of this definition, Davis acknowledges the need to have case managers who are aware of both the increased morbidity and mortality associated with SPMI and the need for psychosocial and cognitive therapies. In reality, MHCM generally involves providing services where possible and referring elsewhere when necessary.

Davis (2006) introduces the notion of generalist and specialist models of MHCM. The generalist provides a wide range of services from mental health care planning to addictions counseling and monitoring of physical illnesses, depending on the scope of practice allowed by the CM’s profession, education and experience. The advantage of the generalist is in the holistic focus to care and the optimization of rapport with the client. The disadvantage of this model lies in the complex nature of SPMI and the inability to be “all things to all people”. The specialist is a primary worker who focuses on medical management (i.e., medication efficacy and adherence) and defers to other specialists (e.g., recreation therapists) for other concerns. The benefit of the specialist model lies in the ability of the case manager to target more intensive and specific interventions

necessary for goal attainment. A disadvantage may be decentralization of services with a confusing number of caregivers providing expert care.

Health Canada (1997) further defined the role of MHCM as revolving around a core expectation that case managers establish and maintain therapeutic relationships built on trust and respect for clients with SPMI, and provide constant and ongoing support through a range of needs and service priorities. The therapeutic relationship is essential in developing collaborative partnerships that are flexible and creative and that promote community living through symptom management and linkages with community supports (Falk & Allebeck, 2002; Forchuk, Ouwerkerk, Yamashita, & Martin, 2002). The details of specific models of MHCM will be explored later.

Best Practices and Evidence-Based Practice

Mental health best practices and evidence-based practice (EBP) emerged in response to a history of psychiatric practice that was more art than science (Davis, 2006). EBP refers to the process of collecting data about quantifiably proven (i.e., research-based) strategies and the utilization of such knowledge by clinicians to obtain expected outcomes (Davis, 2006) and effective health care that is cost-effective (Dictionary of Nursing, 2003). Within the context of mental illness, the usual outcomes expected are (a) reduction of symptoms, (b) decreased use of expensive hospital treatment, (c) improved functioning, (d) enhanced quality of life, and (e) increased satisfaction in the lives of clients and their families (Davis, 2006).

Herrick and Bartlett (2004) discuss health outcomes as falling into two categories: those that represent a cost savings to health organizations and those that represent perceived quality of care. They suggest that research outcomes rarely reflect client and

community satisfaction with health care practices, or absolute measures of health, such as changes in mortality rates, socioeconomic disadvantage, housing insecurity or availability of desired resources. In fact, cost-based outcomes seem to be outputs measuring numbers of things (e.g., bed utilization, percentage of compliance, housing stability) rather than the health of clients served by the mental health centers.

The Concise Oxford English Dictionary (2006) defines “outcome” as a consequence. For the purposes of this project, outcomes will be distinguished from outputs and defined as the result or visible effect of performing MHCM activities. The concept of output is likened to a factory in which an amount of something is “produced or manufactured during a certain time” (American Heritage Dictionary of the English Language, 2006b). The emphasis is on controlling the actions of the service delivery system in an effort to produce a valued and predictable response or product. Researchers frequently identify outputs (e.g., data on decreased hospital bed utilization, symptom reduction, service utilization, etc.), partly because these outputs are easily measured, rather than outcomes in their discussions of client response to various treatments (Mueser, Bond, Drake & Resnick, 1998; Rapp & Goscha, 2004; Thornicroft & Bebbington, 1996). Certain quantifiable outcomes (as opposed to outputs) are commonly recognized as in the EBP literature.

In the mental health community, such outcomes include the comparison of the client’s symptoms with established diagnostic criteria that are measured through use of psychiatric rating scales. This approach works by validating that the client has a specific mental illness and also the degree to which the illness is disabling. Social functioning, quality of life, family care giving, and service utilization are also considered to be

outcomes, yet are more difficult to measure (Thornicroft & Bebbington, 1996). Case management, however, involves delivering care in a holistic framework to achieve the biopsychosocial goals of the client rather than the organization. Thus, appropriate outcomes might be concepts of good health, life satisfaction or feelings of security, concepts that are often addressed through qualitative methodology, but for which quantitative measures have been developed.

A final point in this discussion on best practices is the notion that there is one static best practice that should be followed. In this point of view, once evidence is found to support specific activities, such evidence should be used to justify practice with all clients in every setting and, consequently, MHCM should engage primarily in these activities. The assumption of there being one best way to care for mentally ill clients in the community may stifle an evolving process that should be responsive to the client's lived experience.

Project Question

The development of a question to guide this literature review started with my dissatisfaction with the level of community health care I was providing for persons diagnosed with SPMI. Nurses and social program officers in my work setting were expected to provide community care for 45-50 clients diagnosed with a severe and persistent mental illness, and to do so within an area that extends 25-35 miles in each direction from the mental health centre. It seemed we were doing a better job of helping clients gain admission to psychiatric wards than helping them live successfully in the community.

Over the years I came to realize that there was no clearly defined model of case management being used in my place of work but rather a construct cobbled together from bits and pieces of medical, rehabilitative and community expectations. The only outcomes that really seemed to matter were decreased emergency and hospital bed utilization. I was expected to provide referral and hands-on services to the client, family and community within a set of stakeholder expectations that, in my experience, exceeded the ability of any one professional to carry out. Nurses and other health professionals are trained in establishing caring and therapeutic relationships and, though qualitatively measured through client and caregiver interviews, staff and client satisfaction within these expectations are rarely given the same attention as economically based outcomes.

Three MHCH models, evident in the literature, appear to be combined in my CM practice. Thus, the MHCM model in use, based on the outcomes expected, seems to be a combination of Clinical Case Management (CCM), Broker Case Management (BCM) and Assertive Community Treatment (ACT). Case managers are expected to (a) provide situational and crisis counseling (CCM), (b) refer clients to a number of community agencies (BCM), and (c) assertively engage the client in the community to assess treatment compliance, medication efficacy and housing stability (ACT). Unfortunately, there is little evidence that a hybrid model such as the one I have described, is capable of delivering outcomes desirable to all stakeholders, including clients, health care providers, and the community.

The development of a question for this literature review was an evolving one intended to identify the gaps in research knowledge currently available. Polit and Beck (2004) identify a series of steps that move the researcher from questions that are too

broad or complex in scope to a question with readily definable concepts. The inclusion criteria for key words in the search need to reflect the concepts identified in the question (Law, 2004; Polit & Beck, 2004). I began with the question, “What are the outcomes that can be expected from various CM models?” The concepts embedded in this question are “outcomes” and “CM models”.

My initial literature search contained vague and contradictory results that I thought failed to address health care outcomes, prompting me to define my question further. My question became, “What MHCM characteristics are associated with enduring outcomes?” The defined concepts for this question are “enduring outcomes” and “MHCM characteristics”.

Given the historical context of MHCM, the literature review will start with a description of the seminal work carried out by pioneers involved in the MHCM model designs. This will be followed by the collection, analysis and synthesis of research articles evaluating MHCM over the past 17 years. Through this, I intend to describe the components of various MHCM models as well as predict what enduring outcomes may be achieved. In the next chapter, I describe the methodology used to search the literature and address the study question.

Chapter Two

Methodology of a Descriptive Literature Review

Given the confusing state of the MHCM models currently in use in my area it seemed logical to conduct a literature review to gain clarity about the context of various MHCM models and the rationale for subsequent modifications to those models. Thus, I chose to conduct a descriptive review. Fink (2005) suggests that a descriptive review is relevant in situations where the reviewer uses personal knowledge and experience to "synthesize the literature by evaluating similarities and differences in the purposes, methods, and findings of high quality research" (p. 198). With over twenty years experience in mental health, including the last ten years in case management, I have both the knowledge and experience to identify valid and reliable research within the context of everyday practice.

Purpose of a Literature Review

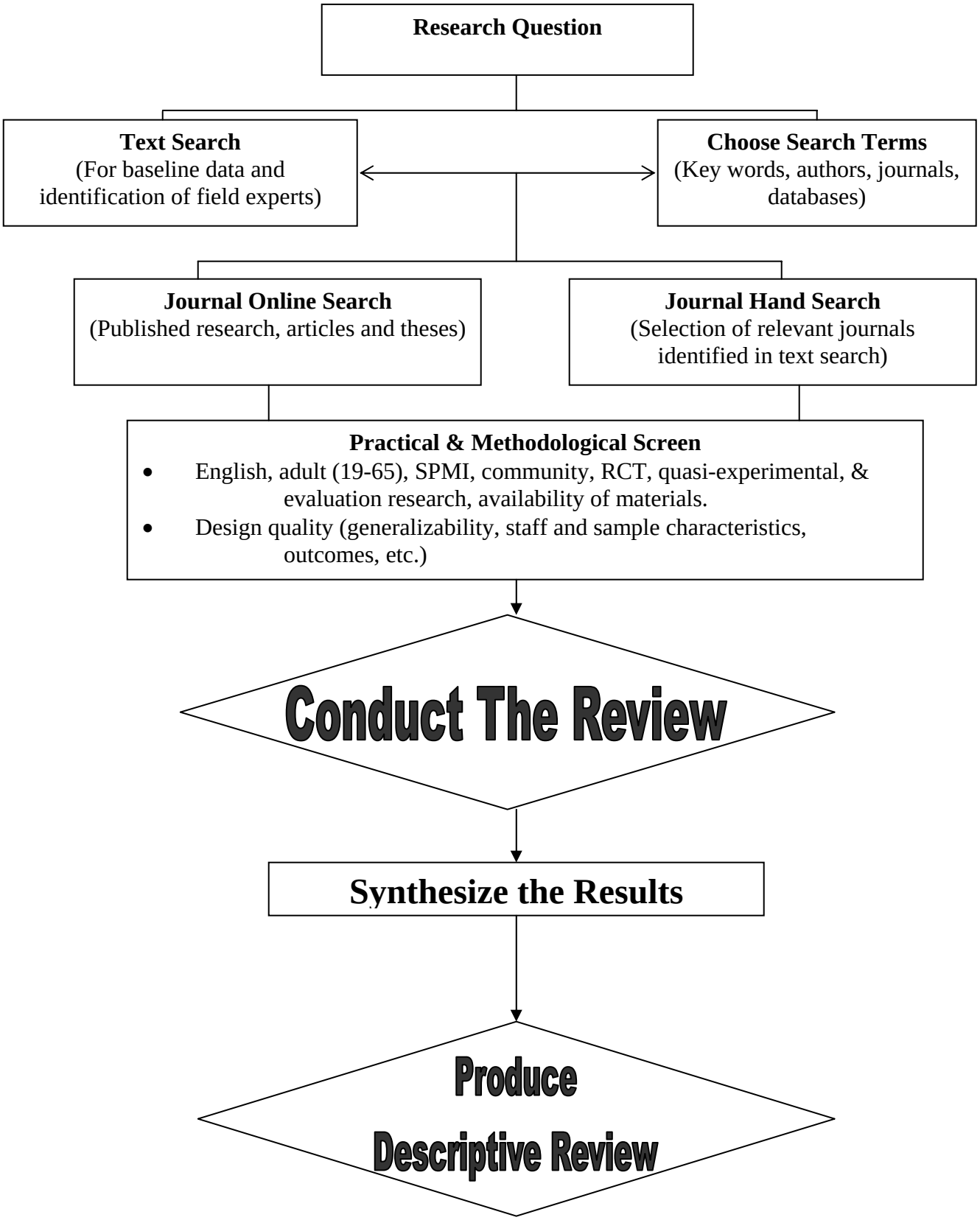
A literature review can help identify gaps in knowledge, highlight the importance of further study and identify clinical practices that have been shown to promote health and well-being in the population of interest (Colling, 2003; Fink, 2005; Taylor, 2006). A descriptive literature review, as is being proposed here, provides professionals with a methodology that can inform how current knowledge guides practice. Gaps in that knowledge are identified, informing the researcher of the need to implement future research and development strategies (Fink, 1998; Fink, 2005).

The literature review allows the researcher to critically appraise and analyze current published research to determine valid and unbiased results (Fink, 2005; Taylor, 2006). For this review, I used Fink's (2005) method of selecting, collecting, organizing

and analyzing available research with a view to making policy recommendations to mental health administrators in my area (see Figure 1). Her method clearly outlines the processes required at each stage of the review.

The purpose of this literature review was to identify current trends in MHCM by examining research on the development and implementation of MHCM models within various contexts. In addition, I focused primarily on research literature published since the review written by Mueser, et al. (1998). Ultimately, the purpose was to synthesize the available information to produce a framework in which the immediate and enduring outcomes that may be expected when various models are used are outlined.

Figure 1-Descriptive Literature Review



Adapted from: Fink, A. (2005). *Conducting research literature reviews. 2nd Edition.* Thousand Oaks: Sage.

Scope of the Project

This literature review and analysis covers published and peer reviewed primary studies, research articles (1980-2007) and reports on case management of clients with severe and persistent mental illness. The review is then used to describe CM models contextually, identify research related to quality of life and treatment efficacy and identify gaps in knowledge to serve as a platform for further evaluative research. In Figure 1, I describe the process from the generation of the research question to the production of the descriptive review.

Only research articles written in English, regarding health care in economically developed countries and related to adult clients (age 19 to 65) receiving community care and diagnosed with SPMI were used. Due to the high rates of substance abuse in this population (Government of Canada, 2006), a concurrent diagnosis of substance use was not seen as a reason for exclusion from this study. References at the end of each article were reviewed to identify other influential work, or authors frequently cited, and to identify books seen as essential to the field.

Key words were chosen based on the concepts most frequently used in relation to community care of clients with SPMI. The words that were used for this search were: case management, severe and persistent mental illness, care management, care programming, broker case management, assertive community treatment, clinical case management, community treatment, strengths based case management, mental health, psychiatric case management, evaluation, outcome and comparison.

Method/Search Process

Text search (1980-2007). Prior to starting on my search for research articles I wanted to ensure that I had enough information to validate my choice of search key words and authors. Following a recommendation by Gordon and Jones (2006), I conducted a text search of the "Books" section in the University of Victoria's Libraries Gateway in May of 2007 using a number of key words. The initial search using "case management" (51 books), "mental health" (2201 books), "mental illness" (701 books), and "case management and mental health" (6 books) gave me a starting point.

From the initial six books identified by combining case management and mental health, I found other key words such as "community care" and "mental health" that yielded another nine books. By the end of this exercise, I had identified over twenty texts and additional keywords used to augment the search. In addition to validating the historical context of MHCM, the text search provided me with a rich source of references to identify key authors, as well as key journals to investigate by hand search or through electronic databases.

Entire textbooks were devoted to describing the theory, assumptions, and principles of three models: (a) Community Case Management (CCM), (b) Assertive Community Treatment (ACT), and (c) Strength-Based Case Management (SBCM). In contrast, Broker Case Management (BCM) was only referred to as a seldom-used strategy for providing referral services, or as a precursor that served to inform later models.

Choice of Online Bibliographical Databases.

The databases chosen for this review reflect the complex nature of understanding and treating mental illness. Researchers believe that mental illnesses are biological abnormalities in the brain, triggered by genetic predisposition, stress, illicit drug use, or brain injury. They can correspond to age related changes in the brain, all of which can result in dysfunctional changes affecting relationships and educational/occupational opportunities. The type of disability or dysfunction determines the type of treatment, and/or rehabilitation supports that will be required outside a hospital setting. The web search engines need to reflect this heterogeneity, thus the following databases were chosen: *Academic Search Elite, Biomedical Reference Collection: Comprehensive, CINAHL with Full Text, Cochrane Database of Systematic Reviews, ERIC, Health Source: Nursing/Academic Edition, MEDLINE, PsycARTICLES,* and *PsycINFO.* This selection was intended to yield a good cross section of information from nursing, medicine, social work, psychology, occupational therapy and other health care fields.

Conducting the Journal Search

English language research articles utilizing randomized controlled trials (RCTs) or quasiexperimental methods to obtain results from 1990-2007 were included. My choice of using quantitative data is consistent with Fink's (2005) process of literature reviews in which experimental and observational studies are preferred (p. 15). With the exception of the review by Mueser et al. (1998), most of the literature reviews on MHCM focused on randomized control trials (RCTs) only (Marshall, Gray, Lockwood & Green, 1997; Marshall & Lockwood, 1998). The benefits of this quantitative focus are the familiarity of techniques associated with a scientific nursing background, providing a

"general set of orderly, disciplined procedures used to acquire information" (Polit & Beck, 2008, p. 15). This disciplined process highlights deductive reasoning that takes empirical evidence from controlled studies to predict outcomes that may affect the way health care is delivered, as a way of determining how MHCM is carried out to achieve enduring outcomes (Patton, 2002).

The abstracts of each research article were screened to determine whether the information related to case management outcomes. The studies were examined to identify the immediate and enduring dependent variables (outcomes) and the independent variables (characteristics of the staff and service being used). Then they were analyzed for similarities and differences in purposes, methods and findings.

Sampling size should be the largest possible to ensure that the "averages get closer to the true population value, and the differences in the estimates . . . get smaller as well" (Polit & Beck, 2004, p. 349). Ideally, the sample and control groups should be randomly selected to decrease the incidence of researcher bias, client self-interest or a preponderance of non-representative numbers or special interest groups within the population (e.g., attracting the brightest, highest functioning, healthiest, most social, etc.).

To look at quantifiable outcomes of case management research requires an investigation into the predictors for those outcomes (Fink, 2005). The research articles were analyzed to find similarities in the location of service, staff mix, staff/client ratios, team dynamics (e.g., whether the case managers meet as a team each day, level of autonomy, etc.), length of time the service was provided and client sample characteristics.

The journal search consisted of two stages. The first stage involved an online search based on the key words and authors identified through the text search. All

available journal articles pertinent to MHCM and cross-referenced to keywords were accessed from 1990-2007. Particular effort was spent on reading articles written by Bachrach, Santos, Goering, Harris, Kanter, Kisthardt, Rapp, Wasylenki, Torrey, Fuller, Stein, and Test, all of whom are recognized authors who have expertise in case management. The second stage was a hand search of journals identified in the text search and the electronic journals available for the period 2000-2007.

During my initial text search and review of secondary source journal articles I identified a number of journals that were consistently referenced by the authors. I hand-searched these to locate primary research articles in which various case management models were discussed, evaluated and compared. For example, information on the strength-based model can be found in journals like the *Social Work Journal*, the *Psychiatric Rehabilitation Journal* and the *Community Mental Health Journal*, whereas information on the CCM and ACT models were overwhelmingly favoured in physician-focused journals such as *Acta Psychiatrica Scandinavia*, *Psychiatric Services*, the *Schizophrenia Bulletin*, the *British Journal of Psychiatry*, and the *Journal of Mental Health.* Thus, the first part of my search for case management research focused on the journals most commonly referenced by the model authors. I was surprised that although all case management models included nursing staff, no nursing research was referenced in the above sources.

Consequently, I amended my search to include nursing journals. To the original list of journals I added the *Australian and New Zealand Journal of Mental Health Nursing*, the *Journal of Mental Health Administration* (which features nurses in administrative roles), and the *Journal of Advanced Nursing*. Unfortunately, most of the

articles in these journals focused on selected aspects of mental health nursing (e.g., therapeutic relationships, medication adherence, cultural competence, etc.), but not on examining coordinated case management models of mental health care.

Next I conducted a more comprehensive online search of case management research covering the time period 1990-2007 using the key words and search engines discussed in Chapter Two. I located 396 research articles that I felt would be sufficient to identify immediate and enduring outcomes in various models. The 84 studies that passed the practical screen were further examined for valid application to the models of study and their data collection techniques, interpretation and generalizability.

The Journal Hand Search (2000-2007)

Of all journals hand searched for 2000-2007, the *Psychiatric Services* journal and the *Journal of Mental Health* contained the most research-based CM articles, 14 and eight respectively, the majority of which specifically targeted ACT and CCM. In these two journals alone, researchers of ACT teams use of the model in: (a) establishing rates of client (Bjorkman & Hansson, 2001) and family satisfaction (Harvey, et al., 2002), (b) rural areas (Wane, Owen, Sood, Bradley & Jones, 2007), (c) forensic settings (Lamberti, Weisman & Faden, 2004; McCoy, Roberts, Hanrahan, Clay & Luchins, 2004), (d) veteran populations (Rosenheck & Neale, 2004), (e) substance dependent populations (Essock, et al., 2006; Harvassy, Shopshire & Quigley, 2000), and (f) homeless populations (Chinman, Rosenheck & Lam, 2000; Clark & Rich, 2003) in the British Isles, Europe and North America. In many studies, CCM and ACT were compared in terms of the following: (a) cost, (b) outcomes (health care utilization, employment rates,

medication adherence, etc.), (c) staff composition, and (d) comprehensiveness of service (i.e., hours of operation and services provided).

The journal *Administration and Policy in Mental Health* focused on clinical and cost effectiveness of the teams and the staff dynamics expected or displayed on ACT teams. Of the five MHCM articles during this time period, three were on ACT and two on "intensive case management" (ICM) teams. King (2006) described ACT as "the most standardized and extensively researched form of ICM" (p. 529) and used the two terms interchangeably through his analysis. On the basis of this I added ICM and "intensive case management" to the list of key words to be used in the online search. However, of the five articles published, only one was a quantitative study and thus suitable for my analysis.

The *British Journal of Psychiatry* contained two quantitative studies (Burns, et al., 2002; UK700 Group, 2000) comparing standard CM (1:30-35 case-load) to ICM (1:10-15 case-load), one evaluative study of ACT team fidelity (Fiander, Burns, McHugo & Drake, 2003) to the model originally proposed by Stein and Test, and one study on client characteristics and outcomes (Priebe, et al., 2003). In the *Australian and New Zealand Journal of Psychiatry* was a study on the effects of ICM on service utilization and cost effectiveness (Preston & Fazio, 2000). All five articles were used in this review.

The *Journal of Mental Health* provided the richest source of original quantitative research with seven largely evaluative studies of ACT/ICM teams. Researchers looked at client/systems outcomes (Gillespie, Smith, Meaden, Jones & Wane, 2004; Minghella, Gauntlett & Ford, 2002; Rutter et al., 2004; Wane, et al., 2007) and ACT model fidelity and staff composition (Craig, Doherty, Jamieson-Craig, Boocock & Attafua, 2004; Van

Dijk, Mulder, Roosenschoon, Kroon, & Bond, 2007). Finally, Rutter, et al. (2004) combined outcomes measurements and qualitative interviewing to compare service delivery.

The *Psychiatric Rehabilitation Journal* contained studies comparing outcomes of ACT teams and SBCM. The outcomes included (a) utilization by clients (Barry, Zeber, Blow & Valenstein, 2003), (b) connection and autonomy (Coffey, 2003), (c) client experience of service (Krupa, et al., 2005), and (d) perceived stigma and community integration (Prince & Prince, 2002). These studies were retained for the literature review. To my disappointment, no appropriate quantitative studies were found in the *International Journal of Mental Health Nursing*, formerly the *Australian and New Zealand Journal of Mental Health Nursing.*

Finally, the references for several literature review articles (Morrow, Frischmuth, & Johnson, 2006; Mueser, et al., 1998; Rapp, 1998b; Ziguras & Stuart, 2000) were examined to ensure that I had not missed authors with published research on MHCM. Once assured that I had a comprehensive list of MHCM researchers, I entered their names into my online search to cross check against the results of the keyword search. Some, though not all, of the studies used in these literature reviews were used in this literature review. Ziguras and Stuart (2000) did not discuss model characteristics, Morrow, et al. (2006) framed their synthesis using expert opinion articles on British Columbia Mental Health Services and Rapp's (1998b) literature synthesis included both discussion papers and some research on assertive outreach (as applied to ACT and SBCM teams).

Narrowing The Online Search: (1990-2007)

Previously I described the use of keywords for searching online. My initial search with the keyword “case management” yielded over 25,000 articles. A quick scan of these articles showed me that the term “case management” is used to describe health and social roles within a number of health disciplines that target diverse populations with various needs. By using the keywords “case management” and “mental health”, I reduced the number of articles to 4650, between 1990 and 2007 (See Table 1). Clearly, further refinement was necessary.

I next focused my search on identifying particular models of case management within the search parameters. Information on CCM and ACT was readily available but finding quantitative research for the SBCM model was much more difficult, even with the addition of “recovery” model to assist in the search. For each model, I narrowed the search to select my population of interest, i.e., mental health. As a result of this winnowing, my online search of research narrowed to 396 (301 ACT, 85 CCM, 7 SBCM [plus one recovery-based model], and 2 BCM) articles (see searches numbered 2, 4, 5, 7, and 12 in Table 1).

Table 1: Online Results

Search Number	Query	Results
1	Case management & mental health	4650
2	Clinical case management & mental health	85
3	Clinical case management & mental health & research	18
4	Broker case management & mental health	2
5	Strength based case management & mental health	7
6	Recovery based case management & mental health	0
7	Recovery model case management & mental health	1
8	Recovery model	327
9	Mental health recovery model	0
10	Assertive community treatment	1224
11	Assertive community treatment & mental health	981
12	Assertive community treatment & mental health & research	301
13	Assertive community treatment & mental health & quantitative research	1
14	Case Management	25743

Applying Practical and Methodological Screens

Adding the keyword “research” to the CCM articles decreased the number of articles from 85 to 18 (see search #2 and 3 in Table 1). A quick scan of the online literature helped in excluding articles based on the research process (rather than actual studies), and any studies that were outside the practical screen. That is, only studies on participants with SPMI, between the ages of 18-65, and receiving MHCM services in the community could be included. Studies that were qualitative or a mixture of qualitative and quantitative methodology were not used. Quantitative research was assessed for sampling, population and model types, and the outcomes achieved.

With the exception of a peer pilot study carried out by Craig, et al. (2004), the initial participant screen was set at sample sizes greater than 25 but other screening criteria resulted in the final studies having 45 or more participants. The pilot study was

kept because peer providers were involved and there was excellent fidelity to the original ACT model. Sample size in quantitative studies must be large enough to adequately represent the population under study (Polit & Beck, 2004). Given the high dropout rates (as is the case in those that are homeless, disabled and/or at increased risk for co-morbidity and premature death) and the heterogeneous diagnostic composition in SPMI populations, I worried that smaller sample sizes would poorly reflect this diverse population.

At this point, 83 studies of the original 396 papers remained. Of these, 29 were found to be inappropriate due to: (a) poor fidelity to the original models (e.g., lack of team structure, high caseloads, decreased number of monthly contacts, etc.), (b) use of non-SPMI or ill-defined populations, (c) comparisons to non-MHCM programs, or (d) containing data obtained 10-15 years prior to publication. An additional seven studies that were originally screened in were subsequently removed due to: (a) questionable sampling techniques, (b) high drop out rates, (c) lack of investigator control over aspects of the experiment (e.g., in one study the release of SPMI prisoners did not occur when desired, unduly influencing the results on the cost-effectiveness of ACT), and (d) studying team fidelity rather than client outcomes (See Appendix A). The remaining 47 studies were assessed in Chapter Four for sample, model and staff characteristics, as well as location, outcomes studied, and whether the outcomes that were achieved were short-term or enduring in nature.

In most of the experimental studies, outcomes such as psychosocial functioning, hospital utilization, and emergency service utilization and less frequently, levels of substance use and forensic involvement were assessed. This focus on similar outcomes

assisted in establishing consistent findings across studies. I examined the studies for model fidelity, participant homogeneity, random sampling of participants (preferred), and well-tested tools of analyses (e.g., psychometric scales such as the Brief Psychiatric Rating Scale [BPRS], the Global Assessment of Functioning scale [GAF], and the Social Level of Functioning [SLOF] scale. See Appendix C for a description of these and other scales used).

Establishing equivalence between studies using slightly different models or working in geographically diverse settings was more challenging. When differences were noted, I attempted to determine whether changes in model characteristics (e.g., lack of fidelity), client population, geographical area or other variables) influenced the outcomes and if so, to what extent. For example, in most of the research studies carried out in the UK, Australia and Europe (e.g., Bjorkman, Hannson & Sandlund, 2002; Burns, et al., 1999; Preston & Fazio, 2000; UK700 Group, 2000), the researchers compared ACT teams with client/staff ratios of approximately 10:1 to CCM ratios of 25-30:1 and studies in the USA and Canada (e.g., Goering, Wasylenki, Lindsay, Lemire, & Rhodes, 1997; Jerrell, 1995; Lehman, Herron, Schwartz & Myers, 1993; Tibbo, Chue, & Wright, 1999) had ACT ratios as high as 35-40:1 and CCM ratios up to 45:1. My own experience with CCM has been with ratios of 45-55:1. Such diverse caseload ratios will inevitably affect the number and type of contacts possible between clinicians and clients.

For comparison of experimental or quasi-experimental studies, the instrument and techniques used in the intervention (i.e., the staff within the CM model) need to be consistent across the studies (Polit & Beck, 2008). For example, if an ACT team with a peer provider is compared with another ACT team without a peer provider and the

outcomes are the same for both groups, the conclusion may be that peer providers are not correlated with differences in client outcomes. If, however, the two groups differ in terms of engagement or client satisfaction outcomes, the peer providers become a variable of interest in further studies.

Synthesizing the results. As mentioned earlier, the descriptive literature review (Chapter Five) is sifted through the eyes and analyses of a knowledgeable and experienced reviewer. As a nurse with 24 years of experience in the health care field, the way in which I select, analyze and synthesize these studies should be viewed within the context of the perspectives such experiences may bring. In many respects, I came to this review with a wealth of practical experience and, through reading published historical text, came to understand more fully the initial assumptions, principles and guidelines that informed the men and women who designed early case management models.

Within my perspective, the outcomes that are most valued by systems are decreased hospitalizations and emergency visits (incidents and lengths of stay), co-morbidity and mortality rates, and access to needed health supports (as measured by systems utilization). Psychiatrists seem to value medication and treatment adherence (e.g., using cognitive and dialectical behaviour therapies, occupational therapies, etc.) with related reduction in psychiatric symptoms. Case managers focus on symptom assessments, budgeting, housing stability and effective relationships, while clients often seek assistance in returning to work or school.

The next chapter focuses on the text search and contains current and historical information on case management models. Understanding the models provided a basis for

determining whether MHCM model fidelity was maintained in the studies that I reviewed.

Chapter Three

Mental Health Case Management Models

MHCM evolved from the activities of the community psychiatric nurse in response to the needs of clients with SPMI who were living in the community or discharged from provincial institutions. MHCM nurses were expected to use problem-solving skills to "ensure continuity of services and overcome problems of rigid systems, fragmented services, misuse of certain facilities, and inaccessibility" (Worley, 1997a). Initial health system inclinations to provide clinical and therapeutic interventions ignored the reality of clients living in poverty with inadequate or no housing, social supports or recreational outlets (Goering & Wasylenki, 1996). In response to these unmet needs, a number of case management models emerged to fit the variety of clients presenting with SPMI. In this chapter, I describe more fully the most common MHCM models, first, those that are individually focused and, second, those that have a team-focused approach. I also describe the role of the nurse in the various models.

Individual Focused CM

Individual MHCM for clients diagnosed with SPMI offers a number of benefits to clients, families and community stakeholders. Those who have difficulty navigating the often confusing systems of health and social supports can call on a single professional who either provides care directly or acts as the referral agent and advocate for other non-clinical services. One-to-one counseling enhances the therapeutic rapport seen as essential in most MHCM models of care (Howgego, Yellowlees, Owen, Meldrum & Dark, 2003). In addition, community services providing direct and indirect care have the CM as a single point of contact to resolve issues (Cotroneo, Kurlowicz, Hopkins Outlaw,

Burgess, & Evans, 2001; Cunningham & Slevin, 2005; Hopkins & Ramsundar, 2006). The first individual MHCM structure to emerge following deinstitutionalization was the Broker Case Management model in which the nurse was expected to broker inaccessible support services to meet the needs of clients.

The broker case management model (BCM). The term 'broker' refers to negotiation and intermediary skills required to obtain services for another (American Heritage Dictionary of the English Language, 2006a). Implicit in this definition is the belief that the broker has valuable or expert skills that the client does not. Traditionally, brokerage focused case management required little direct contact with clients and often involved referral to professional and social agencies and/or coordination of care (Clarke Institute of Psychiatry, 1997).

As the first MHCM model to emerge in the 1960s and 1970s following the deinstitutionalisation movement (Herrick & Bartlett, 2004), BCM models were often associated with private health insurance agencies that used brokerage and fiscal control programs for various purposes, such as referral, advocacy, linkage and the establishment or contracting of necessary health and/or social services (Davis, 2006; Goering & Wasylenki, 1996; Manoleas, 1996; Worley, 1997a). According to Worley (1997a), the broker model provides primarily an administrative or managerial function, rather than a clinical role requiring specific medical expertise.

In advocating for clients however, BCM nurses were expected to use clinical knowledge, personal and organizational resources and influence with other providers, and at the same time, to have a passion for the work they did (McConnell, 2004). The BCM model was designed with the realization that, although individuals can advocate for

themselves, by drawing on the resourcefulness of many others, they may do it better. This is particularly true of those diagnosed with SPMI, who may not have the insight or the emotional and physical strength to fight for the health care they want or need.

Rutter, et al. (2004) saw the BCM model as more appropriately situated within the realm of social work wherein funding was managed to provide the services required by community clients. In this conceptualization, the BCM staff work with mental health care providers to meet the individual needs of clients and ensure successful outcomes. Social workers who coordinate, organize and contract packages of services are considered to be working within BCM rather than providing direct services or generic casework.

Jeffreys (2005) and Kinnaird (2007) discuss nurses as "cultural brokers" within general practice. The term is meant to refer to those nursing activities that can bridge or mediate between a culturally diverse population and the organizations that provide health and social services (Kinnaird, 2007). The purpose of these brokers is to "increase quality and years of healthy life for all . . . (and) to eliminate health disparities among different segments of the population" (Jeffreys, 2005, p. 41). The roles identified are culturally congruent care and competency, peer and interdisciplinary education on cultural issues, collaboration and consultation with expert others (including clients), and change management skills (Jeffreys, 2005). Neither Jeffreys nor Kinnaird specified cultural brokerage within a MHCM context but the skills resonate with the original intent of the model, to coordinate resources to meet the needs of a disadvantaged segment of the population.

A research study on brokerage carried out in California looked at the outreach efforts of the state in identifying eligible recipients for financed health care for their children (Jacobson & Buchmueller, 2007). The state educated workers and community volunteers (in hospitals, clinics, schools, churches and other social support entities) in efficiently and effectively filling out insurance application forms and renewals. The state provided funding for each successfully completed application thereby increasing the incentive to pursue outreach aggressively to those who, through confusion or language barrier, were unable to apply successfully. The study revealed that education and experience of these brokers was vital to efficient and successful completion of applications for benefits.

Unfortunately, the above example was the only research on brokering that I found that even vaguely applied to BCM. As a result of this lack of information, I have not pursued this particular model to identify MH outcomes for those diagnosed with SPMI. More appropriately, some of the aspects and CM roles of this model have been incorporated into the other models and are investigated more thoroughly within those contexts.

The clinical case management model (CCM). The biomedical roots of the term clinical are evident in the definition. The Random House Unabridged Dictionary (2006) defines clinical as “concerned with or based on actual observation and treatment of disease in patients” (Electronic Version). The clinical case manager is expected to address all the brokerage functions indicated above, especially in regard to obtaining funding, housing and social supports, but also to observe the client for symptoms and

treatment efficacy and provide direct interventions to alleviate clinical distress (Clarke Institute of Psychiatry, 1997).

Manoleas (1996) saw CCM as emerging from BCM with all the features of advocacy, linkages and managed care but within the perspective of client-focused care planning and the use of periodic psychotherapy (e.g., problem-solving strategies, cognitive behavioural therapy, etc.) when appropriate. The clinical case manager develops relationships with the client within the client's preferred environment in order to identify therapeutic interventions that target the client's unique needs. Manoleas (1996) differentiates CCM from traditional office-based psychotherapy by introducing the environment as a focus for care within a cultural context.

Worley (1997a) identifies "the forging of a relationship between the client and the case manager, the ongoing availability of the case manager as a role model for healthy behaviours, and the active intervention of the case manager in the client's daily life as primary tasks" (p. 133) for CCM. She sees no distinction between the roles of CCM and MH therapist and feels that education, skill and experience are necessary qualifications for the role. Above all else, the relationship is seen as the center around which a wide range of clinical skills can be employed, and CCM is considered individual CM rather than team based.

Goering and Wasylenki (1996) compiled a list of core functions for CCM that includes brokerage, clinical assessment and intervention, service coordination and direct service provision, and provision of specialty services for co-occurring disorders (e.g., mental disability, brain injury, or psychogeriatrics). In this definition, the individual and holistic nature of CCM is clearly observed through direct provision of services and an

ongoing therapeutic relationship with the client. They see CCM “as a mode of therapy as well as a vehicle to provide coordination of care” (Goering & Wasylenki, 1996, p. 316). Though the authors comment on issues of caseload size, they fail to identify basic professional qualifications for CCM and fall short of making recommendations for staff/client ratios that would support their comprehensive definition.

The long-term focus of therapeutic interaction may appear to be at odds with health systems outcomes targeting tangible and immediate outcomes (such as reduction in emergency and acute care services and limiting costs) and speak to the lack of clear purpose in delivering CCM to a heterogeneous population of clients with SPMI (Surber, 1994). Formal and informal therapy is used in CCM to help clients learn successful ways of interacting in the community and may take months or years to achieve.

Formal therapy can be in the form of psychotherapy, supportive family therapy, day programs, or even hospitalization during illness relapses. Informal therapeutic interventions include the provision of food, housing, clothing and personal safety (Surber, 1994). He describes ‘therapeutic’ as that which is helpful to the client and asserts that such an approach may be more often palliative (alleviating suffering) than curative. The CCM is seen as an agent of change “within the client . . .within the client’s environment . . . (and within) the relationship between the client and the environment” (Surber, 1994, p. 7).

Wong (2006) differentiates CCM activities and roles between chronic mental illness (persistent psychotic and affective disorders, organic brain-related issues, etc.) in which progress towards health can be quite slow, and mild mental illness (brief or single incident depressions, anxiety disorders, etc.), in which the focus is rapid and complete

recovery from the illness. His view is that CCM can be used to good effect in both populations but with quite different expected outcomes. Wong (2006) believes that CMs require education in behavioural therapies (learning to distinguish between normal and abnormal behaviours), social skills training (dealing with stress, domestic-living skills, and community-living skills), cognitive-behavioural therapies (which deal with distorted or irrational thinking), and emotion-focused therapies (to increase tolerance of negative emotions and help establish positive relationships).

The homeless population presents unique challenges to CCM through the intersection of poverty, lifestyle, disaffiliation and service resistance (Fellin, 1996). The CCM must advocate for the provision of a basic income and subsidized housing while providing support for work initiatives and counseling for co-occurring addictions. Clients who respond poorly to medications or who have compliance issues may function so poorly that they are unable to clothe or clean themselves adequately, thereby increasing the risk of stigmatization from the general population (Fellin, 1996). Clients with this degree of dysfunction may require a more assertive model of CM, where outreach and direct provision of care take precedence over office-based care.

Many of the authors of research literature seek to compare various MHCM models with “standard” or “regular” case management. Several studies were reviewed in which standard or regular MHCM was defined within CCM definitions (Sells, Davidson, Jewell, Falzer, & Rowe, 2006; Sytema, Wunderink, Bloemers, Roorda, & Wiersma, 2007; UK700 Group, 2000; Walsh, et al., 2001). That is, the case management was office-based, with emphasis on professional/client rapport (as opposed to a team approach), skill and use of various psychotherapeutic techniques, medication and

symptom monitoring and advocacy activities. These services were primarily offered in mental health centres with a focus on assessment and treatment of illnesses. Caseloads tended to be at least double that of either ACT or SBCM models.

The strengths-based case management (SBCM) model. Charles A. Rapp bas been instrumental in forwarding the case for SBCM, with an impressive collection of research, informative articles and text on the strengths model (Bjorkman & Hannson, 2001; Chamberlain, Rapp, Ridgeway, Lee & Boezio, 1999; Marty, Rapp & Carlson, 2001, Rapp, 1998a; Rapp, 1998b; Rapp & Goscha, 2004; Rapp, Shera & Kisthardt, 1993). SBCM or the Strengths Model (both titles are used interchangeably), developed in 1982, has many of the same characteristics as ACT, a team-based MHCM model developed over ten years earlier. The initial SBCM project started with Rapp, R. Chamberlain and a number of students from the Kansas University School of Social Welfare (Rapp, 1998a).

As the name implies, SBCM is community treatment that focuses care on the strengths of the individuals being served. SBCM teams emphasize the well part of the individual with SPMI. Assertive outreach to clients is achieved by helping clients "in identifying, securing and sustaining a range of resources both environmental and personal needed to live, play, and work in a normally interdependent way in the community" (Rapp, 1998a, p. 44). Although the responsibility for direct service rests with a single case manager, provision of this service is within a supportive multidisciplinary team that provides varied expertise, urgent coverage during case managers' absences and supervision for non-professional staff (Rapp, 1998b).

Rapp (1998a) believes that the purpose of SBCM is "to assist another human being, not to treat a patient" (p. 44). The initial emphasis is on providing assistance with

housing, income, medication and health but quickly moves to helping the client access and maintain desired resources in the community. Case managers are encouraged to explore “non-mental health and professionally driven resources prior to consideration of these formally organized services” (Rapp, 1998b, p. 370).

The SBCM staff members are considered generalists with access to professionals and may have diverse professional qualifications (the involvement of nursing seems particularly important), or no professional affiliation at all, as is the case with consumer case managers (Rapp, 1998b). Though SBCM involves individualized service, it does so within a supportive team structure that allows for consultation, creativity and sharing of knowledge. Each team is closely supervised by an experienced mental health professional (nurse, social worker, etc.). The team provides back up and support during absences of other members. Each case manager is responsible for no less than 12 and no more than 20 clients at various levels of acuity (Rapp, 1998b).

As with the other models discussed, SBCM targets clients with SPMI (Barry, Zeber, Blow, & Valenstein, 2003; Bjorkman, Hansson & Sandlund, 2002; Rapp, 1998a; Rapp, 1998b). Unlike the other models, the primary focus of SBCM is not biological assessment of symptoms of neuropathology and medication. A biomedical approach is seen as focusing on pathology, illness or problems that seek solutions from experts and cooperation from clients (Rapp, 1998a). SBCM is primarily concerned with psychosocial rehabilitation of persons, with strategies generated by the expert client, and the belief that concentrating on strengths promotes growth (Rapp, 1998a).

The principles of SBCM include: (a) a focus on individual strength, (b) the primacy of a satisfactory case manager-client relationship, (c) client-determined

interventions, (d) community as a reservoir of resources (rather than as an obstacle), (e) client contact in the community (rather than the office), and (f) the belief that those with SPMI have the capacity to learn, grow and change (Barry, Zeber, Blow, & Valenstein, 2003; Rapp, 1998a; Selander & Marnetoft, 2005). Rather than fostering independence, as is the case in other models, the principles of SBCM encourage mutually satisfying interdependence between the client and the supports (case manager, landlords, employers, etc.) of his or her choice.

The proponents of the strengths model believe that stress, and therefore illness relapse, is decreased when clients believe in their innate strength and their ability to use that strength (empowerment) to obtain available community resources necessary to meet their goals (Rapp, 1998a). Successful case management would produce lesser rates of illness relapse and hospital bed usage because the client would have lower stress levels and increased access to supports in the community (Rapp. 1998a). The focus on SBCM support in occupational and educational pursuits should produce outcomes that address chronic poverty and unemployment rates in the SPMI population. This radical divergence from traditional hospital-based models led Rapp and Goscha (2004) to state that the strengths model is not case management but rather an alternative to it.

Team Focused MHCM

One of the more marked downfalls of individual based MHCM is that with the exception of SBCM, client services are often provided at MH offices and within the professional's regularly scheduled hours of work (usually Monday to Friday, 8:00 am to 4:00 pm). Those clients who experience difficulties with transportation may not be able

to get to the MH centre and those requiring assistance after hours or on the weekend may need to use emergency services to meet their needs.

A second limitation may be the inability of any one professional to meet all the health and social needs in the SPMI population. The incidence of MHCM staff burnout is quite high due to client and systems pressures (Stein & Santos, 1998). Nurses and other CM professionals may not have the occupational, recreational, and educational skills required by clients with multiple dysfunctions and so may need to fall back on their brokerage skills to contract for other services.

MHCM, incorporating 24-hour seven-days per week responsibility, is primarily utilized by staff working within an assertive community treatment model (ACT). ACT teams (also known as mobile treatment, training in community living, and program for assertive community treatment) consist of mobile, multidisciplinary staff with three shared priorities: (a) maintaining patients in the least restrictive environment, (b) preventing the revolving door syndrome of preventable re-hospitalization, and (c) providing continuity of care (Primm, 1996; Rapp & Goscha, 2004)).

The assertive community treatment model (ACT). The ACT model got its start as an innovative in-patient program at Mendosa State Hospital in Wisconsin in the mid 1960s (Stein & Santos, 1998). Drs. Ludwig (director), Test and Marx developed a program that focused staff efforts on psychosocial rehabilitation of long-term schizophrenic patients in readying them for community discharge. At the time, the recidivism rate back to the hospital was high and attention turned towards enhancing the success of community discharges.

With the addition of Dr. L. I. Stein to the program in 1970 the focus switched to providing intensive and sustained support and treatment in the community (Stein & Santos, 1998). The original ACT team staff rotation evolved from an in-patient ward schedule of work, wherein community coverage was available 24 hours a day, seven days per week. Prior to discharge, assessments were carried out to determine the patient's coping skills, deficits and individual need for community living. These intensive and quick response teams immediately targeted gaps in abilities, enabling clients to continue to live successfully in the community.

Current teams in the USA have a secretary/support staff member, as the point person for community contacts. Other team members include social workers, nurses, psychologists, vocational specialists, alcohol and drug therapists, and the psychiatrist (Stein & Santos, 1998). The teams consist of mental health professionals in groups of ten to 15 full-time equivalent (FTE) staff with caseloads of 8-10 persons per FTE (Harvard Mental Health Letter, 2006; Rapp & Goscha, 2004; Salyers, et al., 2003; Stein & Santos, 1998). The psychiatrist and secretary are not considered part of the FTEs.

Staffing is provided seven days per week, with extended hours into the evening and one staff often acts as the on-call member to extend coverage to 24 hours per day if needed. Given an alternating six-day rotation (4 on 2 off) of 8-hour shifts with nine staff, you could have six staff on each day, in addition to the psychiatrist and secretary, to work with 90 clients. By having half the staff work 8:00 am to 4:00 pm and the other half working noon till 8 pm, all six staff would be available to cover the busiest time between 12:00 noon and 4:00 pm. Each member of the team would be required to work 3-4 nights

on call each month to cover between 8 pm and 8 am. The team members operate in both clinical and community settings (Canadian Journal of Psychiatry, 2005, Supplement 1).

Stein and Santos (1998) identify the ACT team clinical population as those diagnosed with SPMI. On discharge from the hospital, the client's psychotic and affective symptoms have stabilized on prescribed medication and the ACT team focuses on providing support to offset the long-term impairments that often precipitate community crises. Stein and Santos (1998) identify the following deficits as frequent precipitators to community failure: "a high vulnerability to stress . . . difficulty with interpersonal relationships . . . deficiency in basic coping skills . . . marked dependency . . . (and) poor transfer of learning" (p. 42). The team helps this population with many activities: (a) to get and keep safe housing, (b) purchase and prepare food, (c) budget finances, (d) attend psychiatric and medical appointments, (e) receive addictions counseling, and (f) navigate the legal system if the client has a forensic history (Falk & Allebeck, 2002; Salyers, et al., 2003).

Ideally, the team meets every morning and members are expected to participate in the discussion of each client. In many ways the 10:1 ratio of clients to staff misrepresents the running of the ACT team. Each member is responsible for 15 to 20 clients each day as one third of the team will not be working on any given day. The team decides on the priorities for the day and divides up the workload, within the competencies expected from each staff member. In some areas of health care, the minimum educational qualification of the ACT staff is an associate degree (a two year university diploma common in the USA) in a health related field (Stein & Santos, 1998).

A crucial aspect of the ACT team relationship with clients is that of engagement (Bjorkman & Hansson, 2001; Meaden, Nithsdale, Rose, Smith, & Jones, 2004; Stein & Santos, 1998). Meaden, et al. (2004) define engagement as a supportive relationship between the treatment team and client that encourages open, ongoing and collaborative discussions about treatment and difficulties in maintaining contact with services. The therapeutic relationship, as discussed earlier, is key to engagement, although the effects on the client in dealing with a team relationship rather than one on one are not discussed in any of the articles I reviewed.

In their literature review, Mueser, et al. (1998) clearly indicate that assertive case management (ACM) is effective in decreasing hospital stays and illness symptomology and that such a model specifies a case load of no more than 10 clients. They did not indicate whether the interventions benefited the health of clients within the social determinates of health, whether the outcomes achieved were enduring or if they were, under what conditions.

Finally, the term intensive case management (ICM) model is often used interchangeably in the research literature with ACT (e.g., Degen, Cole, Tamayo, & Dzerovych, 1990; Harvey, et al., 2002; Hornstra, Bruce-Wolfe, Sagduyu, & Riffle, 1993; Johnson, et al., 1998; McRae, Higgins, Lycan, & Sherman, 1990; Preston, 2000; Preston & Fazio, 2000, etc.) This lack of distinction is particularly evident in studies carried out in the UK and Europe (Walsh, et al., 2001; UK700 Group, 2000) though descriptions of the ICM model in these published articles are informed by utilization of ACT principles or by formal training of staff by ACT experts providing on-site teaching. Schaedle, McGrew, Bond and Epstein (2002) attempted to define differences between ICM and

ACT but their research only encompassed the opinions of experts of what were thought to be important components (in 40 program elements common to each) to the two models, rather than a reflection of current practices. For the purposes of this review, research that is named ICM but is modeled after ACT programs in the USA will be used as ACT research.

The Mental Health Nurse Case Manager

Community psychiatric nursing (CPN) has existed since the deinstitutionalisation movement emptied asylums and mental institutions in the 1950s and 1960s. The introduction of antipsychotic medication meant that clients could be discharged to less restricted environments and the more seriously ill would have their symptoms and medication adherence monitored by community-based nurses (Gillam, 2005). If necessary, medication adherence can now be assured by regular injections of long-acting medications, negating the previous need for daily follow up during oral administration. As years passed, this predominantly clinical focus was modified to include other nursing interventions: counseling, teaching, psychosocial interventions and rehabilitation. Nurse CMs continue to wrestle with competing needs of providing cognitive and behavioural therapies and counseling to their clients and families, while attempting to enforce the social control desired by health authorities, communities and government agencies (Cunningham & Slevin, 2005).

It seems that the degree of autonomy afforded the CPN depends on the model of MHCM being used. In clinical and broker models, the nurse has a high degree of autonomy in determining his/her role with the client, and the amount of time that can be spent in each session or over the course of the relationship (Cunningham & Slevin, 2005;

Wong, 2005). Nurses focus on developing patient skills through use of “talk” therapies and enhance the therapeutic relationship in one-on-one settings. In assertive, intensive or strength-based models there is an emphasis on an interdisciplinary team approach with defined and expected roles for each member. The client is expected to develop trust in the team rather than in any one person. In such a role, the nurse loses the majority of her autonomy in aligning her activities to the timetables of other team members. Clinical decisions are team-based, with a risk of further eroding of the autonomy and clinical judgment skills of nurses. In such a setting, there is no clear individual who acts as collaborator or liaison with professionals and community stakeholders outside the team.

Other aspects of the environment affect the roles taken on by nurse case managers. Herrick and Bartlett (2004) identified organizational goals, client population characteristics, the setting (urban or rural), and specific situations as key considerations in rationalizing the roles dictated and assumed by nurses in the community. Nurses are expected to provide care as the situation and organization dictates and, in a shortage of health care providers, to offer both direct care and coordination of activities with non-professional providers. MHCM nurses provide interdisciplinary collaboration (within and outside the team), direct services, early assessment and competent interventions. Such interventions, however, need to be operationalized within social, biomedical and administrative contexts that demand symptom stabilization, risk management and decreased hospitalizations (Herrick & Bartlett, 2004). As such, care needs to be directed towards well-defined and defensible outcomes that should be clearly stated by health administrators and financially supported by public funds.

Worley (1997) discusses nurse participation in the various MHCM models. In the Service Broker model, the nurse is seen as a supervisor of 5-10 paraprofessional or non-professional case managers (qualifications not stipulated). In the clinical model, the nurse is seen as primarily a "therapist" with graduate degree qualifications. In the intensive model which in this text is consistent with a program of assertive community treatment (PACT or ACT) the nurse, as one member of the team, provides clinical interventions such as supportive psychotherapy, medication management, client and family education and other support roles in conjunction with the rest of the team. The only nursing CM model Worley advocates is one that aligns with inpatient medical units such that each CM has 10 clients in acute care and 30 in the community. The purpose of this model is early discharge from the hospital.

Summary

Despite data that supports the need for medication compliance and treatment adherence, and the danger of using illicit drugs, mental health nurses continue to struggle with clients who refuse to take medication, attend rehabilitation programs or abstain from drug misuse. Researchers agree that engagement and a therapeutic relationship are core to the case manager role, yet there is a distinct lack of quantifiable evidence to indicate what activities in such a relationship, within or without distinct disciplines, result in what outcomes (Currie, Harvey, West, McKenna, & Keeney, 2004; Rapp & Goscha, 2004).

Whether MHCM is provided by individual professionals, supervised individuals within highly supportive groups, or within interdisciplinary programs, the nature of community care of clients with SPMI has certainly evolved since deinstitutionalization commenced in the 1960s. Teams that started with nurses and social workers have evolved

to include recreational, occupational and educational therapists, in order to meet the social and economic impacts of mental health dysfunction. Peer providers have been incorporated into some teams to provide mentoring and encourage the engagement of persons with SPMI who avoid professional-driven services.

As will be seen, as each case management model has evolved, so have the expectations for health outcomes. What remains to be seen are which outcomes are most valued, valid and enduring to a particular model and to what degree fidelity to that model will affect the expected outcomes. Chapter Four involves analyzing the case management research spanning the last 17 years (1990-2007) focusing on current CCM, programs of ACT and use of the SBCM model.

Chapter Four

Analyzing the Literature

As described in Chapter Two, a descriptive literature review involves sifting available research on a topic through an experienced reviewer's eyes. In my experience, the clients served on MH teams are not homogenous in clinical characteristics and thus can be expected to exhibit different levels of functioning and potential for community rehabilitation. In view of this, particular population characteristics will be identified in relation to the characteristics of the CM model used and an identification of the outcomes that were achieved in each study.

Sample Characteristics

The sample characteristics presented here represent only those participants who were willing (or unaware in the case of one retrospective and one observational study) to be part of the studies described. Twelve of the 47 studies were randomized control trials (RCTs) while participants were purposively sampled in the other 35. Of the 47 reports, 27 authors failed to provide drop out rates from their original sampling. Of the 20 authors that did report, the rates of drop out ranged from a low of 5% to a high of 54%. In 11 of these, the drop out rates ranged between 5-20% but seven were higher, between 21-30%. Overall, 18 studies had drop out rates of 30% or less, but the remaining two studies had drop out rates of 48% and 54%.

As mentioned in Chapter One, the original population of interest for case management was those persons who were being deinstitutionalized. Later, those with persistent mental illnesses and frequent hospitalizations because of poor functioning in the community were included. In the context of this literature review, both

deinstitutionalized patients and persons identified as high users of MH services were described as having a severe and persistent mental illness. The severe and persistent nature of these illnesses can lead to homelessness, illicit substance use, and involvement with the criminal justice system and, as such, are variables of interest in this review. The researchers in all but one study described their participants as having SPMI, being frequent users of hospital and emergency services, and significantly dysfunctional in most of their endeavors. However, the actual diagnoses and the functional level of clients that fit with a designation of SPMI seem varied and open to interpretation.

The percent of participant population diagnosed with any psychotic illness differs from study to study and model to model. A diagnosis of psychosis was more likely in SPMI participants on ACT and CCM teams (60% of the samples in the studies conducted) compared to SBCM participants (40% of the samples in the studies conducted). Of all the research studies, 28.5-40% (ACT v. SBCM) did not identify sample diagnostic percentages in their findings. Few researchers distinguished between the severity and dysfunction associated with schizophrenia and that with persistent depression or personality disorders. The researchers in the single study that failed to name, define, or describe SPMI (Wasylenki, Goering, Lemire, Lindsey & Lancee. 1993) referred to participants as homeless persons with a variety of mental health and social issues.

Pre-study use of hospital and emergency services was quite high in most of the SPMI samples studied. However, the authors of nine ACT, three CCM and one SBCM studies failed to measure pre-study hospital utilization. In the remaining 34 studies (72%), hospital utilization was measured as the number of admissions or length of

hospital stay (LOS). The mean number of admissions ranged 1-3.8 in the previous year. Lifetime admissions ranged from 4-9.7. Length of stay varied from 35-180 days in the year preceding intervention or 166-1106 bed days over a person's lifetime.

The percentage of males in the combined studies ranged from 34-96%; seven studies had from 40-49% males, 18 had 50-59% males, and 13 reported 60-79% males in the cohort (38% and 96% men were found in one study each). Eight of the studies had 49% or less participation by males in the studies and 32 had 50% or greater participation by males in the studies. The authors of the remaining seven studies did not report gender characteristics.

The mean ages quoted in 68.1% of these studies ranged from 27.5 (early psychosis study) to 49.5 years. In approximately 42 percent of the studies (N=20) participant age was between 30-39 years and 25.5% of the studies (N=12) reported ages from 40-49. Approximately 32 % of the researchers did not report on the ages of participants (N=15). Thus, most participants were between the ages of 30-50, which is consistent with the severe and persistent nature of schizophrenia and major affective disorders, and the reduced lifespan experienced in these populations (*Canadian Journal of Psychiatry,* 2005; Health Canada, 2002; Muir-Cochrane, 2006; Robson & Gray, 2006).

Substance abuse was studied in some studies but not in others. Twenty-five studies (53.2%) either excluded participants with substance abuse issues or failed to report on the incidence within the sample studied. One study reported the presence of substance abuse in the sample but did not indicate the extent of use. Of the remaining 21 studies, substance abuse issues were experienced by 100% of the participants in four

studies of dual diagnosis, by 60-71% in four studies, by 31-59% in seven studies, and by 6-30% in the other six studies.

Given that this population had been institutionalized in the past because of an inability to function in community settings, some authors collected data on functional ability (Global Assessment of Functioning [GAF]), levels of homelessness, and forensic involvement. The GAF scale measures overall functioning on a scale of 0-100 where "normal" healthy individuals would score within 80-100 and those experiencing transient high levels of stress might score within 70-80 (Marshall, Gray, Lockwood, & Green, 1997). Only eight researchers indicated that GAF scores were obtained at baseline for their study participants and those scores ranged from 40-56.3, indicating moderate to severe symptoms with corresponding difficulty in social, occupational or school functioning (see Appendix C). Five studies contained data on forensic involvement ranging from 14-100% (14, 20, 42, 50, and 100%).

Nine researchers identified homelessness as a variable of interest in the samples they were studying. Of these, 1.8-26% of the participants were described as homeless. Five authors identified homelessness rates in 1-7% of their samples and four had homelessness rates between 15-26% in their participants. In addition, three authors quoted 100% rates of homelessness (Essock, et al., 2006; Goering, Wasylenki, Lindsay, et al., 1997; Meisler, Blankertz, Santos, & McKay, 1997), though in these cases the variable studied was housing stability in those served by ACT teams.

The last participant characteristic to be discussed is the reporting of medical co-morbidity within participant populations. Of the 47 studies reviewed, only three authors examined the incidence of physical illness (chronic or acute) within their samples:

Goering, Wasylenki, Lindsay, et al. (1997) reported a 40% incidence, Macias, et al. (2006) a 7% incidence and Udechuku, et al. (2005) reported a 37% incidence of physical co-morbidity. Five other studies reported death rates ranging from 1.8% (13 out of 382) to 14.1% (8 out of 64). In this last case, Wasmer, Pinkerton, Dincin and Rychlik (1999) reported eight deaths during the 10-year study and one successful suicide. Of those dying of natural causes, six died of cardiac pathologies, one from cancer, and one from cirrhosis of the liver. The mean age at time of death for Wasmer, et al.'s sample was 44.7 years.

In the next section of this chapter, I look at specific model characteristics to identify staff numbers, professional affiliations, roles, practices and outcomes as variables of interest to the researchers.

Model Characteristics

In these studies conducted between 1990 and 2007 (See Appendix B), the authors of 42 of the 47 research articles examined the ACT model either singly (26) or in combination (16) with other models. This abundance of research provided me with the means to identify different model characteristics in comparison to established models of care and the variables of interest pre- and post-intervention. Of the 18 CCM research studies only three provide pre-post data, the remaining 15 studies compared CCM to ACT. In five studies, the SBCM model was evaluated with three pre-post studies and two comparison evaluations (one in comparison to ACT and one comparing the model to ACT and CCM).

Below, in each of the three models studied, particular emphasis is placed on identifying the stated focus of the models, the staff composition and team processes, the

geographical context of the interventions, and the systems and client outcomes associated with each study.

ACT Teams (42 Studies).

Focus of ACT teams. The stated purpose of all teams was to provide necessary health and social supports to clients in the community rather than in institutions. Depending on the team studied, supports included establishment of a therapeutic relationship, vocational and emotional rehabilitation, and substance abuse treatment with a goal of reducing the use of hospital and emergency services. Engagement with community and health services and enhanced therapeutic relationships is a priority of ACT teams in attempting to help hard-to-reach clients obtain stable housing, adequate finances, and rewarding relationships with family and community providers. Therapeutic relationships formed between clients and individual case managers but also between clients and other members of the ACT team. Ten of the studies identified enhanced therapeutic relationships as team goals.

Vocational and educational rehabilitation as well as other social goals were discussed in 14 (33.3%) of the studies. On these teams, clients were encouraged to focus on their individual strengths, make use of non-health related community resources, engage in leisure activities, and pursue work and educational goals. Transition to less intensive CCM was a desirable focus for two teams, whereas there was no time limit for the other 12 teams.

Substance abuse treatment was addressed on four of the ACT teams studied with both individual and group therapy being offered to the clients. Substance abuse was an exclusion criterion for one study carried out by Minghella, et al. (2002). In most cases,

the studies excluded clients with a primary diagnosis of substance abuse but accepted participants who had abuse issues as a secondary diagnosis separate from SPMI.

One of the outcomes measured by researchers studying ACT teams is hospital and emergency services utilization by team clients. The clients on these teams had high rates of hospital and emergency use prior to becoming involved with the ACT teams in their communities. In 55% of the studies, the most seriously ill persons with SPMI were targeted for clinical treatment. Priorities included medication-monitoring, reduction of symptoms, intervening during crises, accompanying clients to medical appointments and providing medical care. This medical treatment focus was most often associated with teams that had nurses identified as case managers.

ACT shared caseloads with multidisciplinary teams. In 32 (76.2%) of the 42 studies, the concept of a multidisciplinary team approach was discussed. Members of these teams shared generic duties and responsibility for the entire caseload. Of the seven ACT teams identified with individual caseloads, three had daily team meetings (Jerrell, 1995; Preston, 2000; Solomon & Draine, 1995b) and four teams did not (Goering, et al., 1997; Preston & Fazio, 2000; UK700 Group, 2000; Walsh, et al., 2001).

ACT staff characteristics. Registered Nurses (RNs) or Registered Psychiatric Nurses (RPNs) fulfilled case management or supervisory roles in 71.4% of the studies and constituted the entire case management team in two studies where they were paired with psychiatrists. Social workers were identified in 31 % of the studies and psychiatrists in 47.6%. Other health professionals such as occupational therapists (OTs), vocational specialists, psychologists, and addictions counselors were included in 35.7% of the

studies. Non-professional staff (clients, aides, workers, and drivers) were identified as team members in 19% of the studies.

ACT team characteristics. The vast majority (69%) of the researched study teams carried caseloads of 10-15 clients, with 16.6% of the teams having fewer (5-9), and 14.2% having greater caseloads of 15-20 (N=3) and over 20 (N=3). Having a smaller, shared caseload serves two purposes. The small number of clients allows for more frequent, intense contacts in the community and decreased staff burnout by sharing the burden of caring for more seriously ill clients (Stein & Santos, 1998). In the study by Goering, et al. (1997), the caseload started at 10 and increased to 15 clients as they stabilized. Only one study (Bjorkman & Hansson, 2001) failed to state the caseload size of the ACT team studied.

Some of the researchers (9.5%) identified the chronic nature of SPMI clients in ACT teams that provided "time unlimited" care. As mentioned above, two teams actively sought rehabilitation of clients into less intensive teams. The temporary or pilot nature of many of the studies carried out with this SPMI population restricted the studies to time limited interventions of, generally, one to three years. Most of the authors did not elaborate on whether the teams continued after the end of the study.

In 16 studies, the availability of the team to clients was reported. Of those, 10 teams operated 24 hours per day, seven days per week. Five teams operated 16 hours per day with reduced weekend hours. Only one team functioned from Monday-Friday 8:00-4:00. The majority of non-24/7 teams cut down on costs by having either a hospital nurse or an emergency crisis team provide services during the evenings and weekends.

ACT *geographical characteristics.* ACT teams in rural settings (one each in New Hampshire, Tasmania, the Netherlands, and England) were examined in four studies. The caseloads were predominantly low and the number of contacts decreased due to time spent covering a large catchment area. The remaining 38 studies were carried out in urban settings. Of these, 19 were carried out in the USA, nine in the UK, three in Europe, two in Canada, five in Australia (one in Tasmania).

Outcomes. The cost effectiveness of ACT teams compared to other models of care remains unclear. Five studies revealed increased costs or no cost savings by ACT teams. Three of those were in the UK (Clark, et al., Minghella, Gauntlett & Ford, 2002; UK700 Group, 2000) with large participant samples and well defined staff and model characteristics. The longest study conducted in the USA (McRae, et al., 1990) indicated no cost savings over hospitalization. A single small study conducted in Australia (Johnson, et al., 1998) indicated very modest increases in model costs. Only the UK700 Group (2000), a collective study team consisting on 28 clinicians in four centres, expanded on the social costs of keeping participants in the community.

Four studies between 1998 and 2005 support ACT teams as cost effective compared to other CM models or non-case managed control groups: two from Australia (Preston & Fazio, 2000; Udechuku, et al., 2005) one from the USA (Essock, Frisman, and Kontos, 1998)**,** and one from the Netherlands (Dekker, et al., 2002). None of these addressed the social costs or compared the costs to other case management models. Although hospital use is connected to the cost effectiveness of any model of care, this aspect will be discussed separately.

Costs of care in the community can be affected by the frequency of re-hospitalization and length of time spent as an inpatient. ACT teams are expected to assist in timely discharge from inpatient units and divert clients away from emergency services by providing more supports in the community (Ryan, Sherman, & Bogart, 1997). As seen in Table 2 and 3, the studies supporting or not supporting decreased hospital utilization rates are evenly divided with nine studies each, with little difference in these varied outcomes over the span of 17 years. The studies supporting decreased utilization involved 1417 participants, and five countries (USA, Australia, UK, Canada, and the Netherlands) and lasted for nine months to 10 years.

Table 2: Research Supporting Decreased Re-Hospitalization Of Act Participants

Date/Research	**# Of Participants**	**Length of Study**	**Findings/Comments**
Degen, Cole, Tamayo & Dzerovych (1990**,** USA)	47	15 months	There was an 83% reduction in admissions 15 months after receiving ACT than in the 15 months prior to admission.
Dekker, Wijdenes, Koning, Gardien, Hernades-Willenborg, & Nusselder (2002**,** Netherlands)	79	2 years	ACT: LOS ↓66%,
Dietzen & Bond (1993, USA)	155	12 months	Groups with the highest levels of service) had the lowest levels of service utilization.
Essock, Frisman, and Kontos (1998, USA)	262	18 months	ACT clients spent½as many days in the hospital as did the CCM participants.
Preston & Fazio (2000, Australia)	160	3 years	Cost savings, largely through decreased use of inpatient LOS
Priebe, et al. (2003, UK)	498	9 months	All three ACT groups had significantly decreased incidence of compulsory treatment orders, hospitalizations and LOS in acute psychiatric units.
Tibbo, Chue, &	118	2 years	Admissions: Reduction of 34%

Wright (1999, Canada)			(↓128 fewer admissions) Length of Stay (LOS): Reduction of 56% (↓11,836 bed days)
Udechuku, et al (2005, Australia)	43	2 years	Clients receiving ACT in there area showed a significant reduction in psychiatric admissions (42%) and LOS (reduction of 85%)
Wasmer, Pinkerton, Dincin, & Rychlik (1999, USA)	55	10 years	Reductions in hospital bed use consistent throughout ten years of contact with ACT team.

The nine studies supporting no difference or increased hospitalization were conducted primarily in the USA (seven studies) with two studies carried out in the UK. These studies lasted six months to seven years (McRae, Higgins, Lycan, & Sherman, 1990) and involved 1843 participants. Hospitalization utilization was measured by number of admissions as well as length of stay (LOS).

Table 3: Research Supporting Increased Re-Hospitalization Of Act Participants Or No Change

Date/Research	**# Of Participants**	**Length of Study**	**Findings/Comments**
Barry, Zeber, Blow, & Valenstein (2003, USA)	174	Two years	Increased use of tertiary medical services. Decreased LOS in psychiatric hospitals.
Ben-Porath, Peterson, & Piskur (2004, USA)	55	Three years	An overall reduction of 72% in hospital bed-days and 86% in ER contacts at three years post-intervention compared to 1-year pre-intervention.
Burns, Creed, Fahy, Thompson, Tyrer, & White. (1999, UK)	708	Two years	No significant differences in outcomes compared to CCM
Curtis, Millman, Struening, & D'Ercole (1992, USA	435	52 months	Both ACT and CCM had twice as many participants hospitalized as the control group, over twice as many re-hospitalizations, and 2-2.5 times the total LOS.

Gregory & Hovey (2005, UK)	59	6 months	There were no demonstrated benefits to having an ACT team provide extended work services outside normal Monday to Friday dayshift hours.
Hornstra, Bruce-Wolfe, Sagduyu, & Riffle (1993, USA)	224	2 years	Though ACT participants had less clients hospitalized for fewer days, the differences were not considered statistically significant
King (1998, USA)	56	12 months	Decreases in admissions and LOS but not significantly different from the BCM model.
McRae, Higgins, Lycan, & Sherman (1990, USA)	72	Seven years	Hospital utilization remained unchanged after two years of treatment.
Nieves, E. (2002, USA)	60	<12 months	There were no fewer hospital rates

Of consideration in interpreting Table 2 and 3 are: (a) varying definitions of SMPI in study participants, (b) availability of community resources supporting early discharge, and (c) adherence of differing teams to the original ACT model. Early discharge can be enhanced when the client has a higher baseline level of functioning, can rely on supportive housing and community resources, and has access to mental health staff 24 hours per day, seven days per week. An absence of these protective factors would in all likelihood adversely affect re-hospitalization rates in a vulnerable population.

Researchers in eleven studies looked at whether the interventions by ACT members resulted in improvements in personal and social functioning, as measured by tools such as the:

(1) Global Assessment of Functioning (GAF) scale (Marshall, et al., 1997),

(2) Social Level of Functioning (SLOF) scale (Chien, Chan, & Thompson, 2006),

(3) Groningen Social Behaviour Questionnaire-100 (GVSG-100) (Trompenaars, Masthoff, Van Heck, de Vries, & Hodiamont, 2007),

(4) Life Skills Profile (LSP), and (Habibis, Hazelton, Schneider, Davidson, & Bowling, 2003), and

(5) Health of the Nation Outcome Scale (HoNOS) (Royal College of Psychiatrists, 2007) See Appendix C for further information on these and other scales used in the studies.

Clinical improvements were assessed with scales like the Brief Psychiatric Rating Scale (BPRS) (Leucht, et al., 2005). As with the previous outcomes discussed, the measurement of participant functional levels met with mixed results. Compared to baseline, ACT participants showed improvements in many areas of functioning in eight of the 10 studies (Dekker, et al., 2002; Habilibis, Hazelton, Schneider, Davidson & Bowling, 2003; Johnson, et al., 1998; Jerrell, 1995; King, 2006; Minghella, Gauntlett, & Ford, 2002; Tibbo, Joffe, Chue, Metelitsa & Wright, 2001; Wasylenki, et al., 1993). The greatest improvements were noted in those with a lower baseline measurement of function (Tibbo, et al., 2001). However, ACT participants were not shown to achieve greater levels of functioning when compared to other models (Barry, et al., 1999; Burns, et al., 1999; Dekker, et al., 2002; Habilibis, et al., 2003; Jerrell, 1995; King, 1998).

There is little doubt that the ACT model positively affects stable housing (Table 9). The study by Meisler, et al. (1997) was particularly telling with the successful community placement of 93% of the participants (previously hospitalized or in jail) in stable housing by the end of the 4-year study. This speaks to the enduring effects of intense interventions on levels of homelessness in this vulnerable population. Unfortunately, the other studies are quite short in duration supporting a short-term result, rather than an enduring outcome.

Table 4: Research Supporting Housing Stability Of Act Participants

Date/Research	**# Of Participants**	**Length of Study**	**Findings/Comments**
Calsyn, R., Morse, G., Klinkenberg, W., & Lemming, M. (2004, USA)	98	15 months	ACT participants had increased housing stability post-intervention.
Essock, Frisman, and Kontos (1998, USA)	262	18 months	ACT clients spent more time living in the community (rather than being homeless, couch-surfing or incarcerated) than the CCM participants.
Goering, Wasylenki, Lindsay, Lemire, & Rhodes (1997, Canada)	55	18 months	The most significant improvements in housing
Meisler, Blankertz, Santos, & McKay (1997, Delaware)	114	4 years	All were homeless at baseline. At 48 months-81% housed independently, 9% in transitional housing, 4% respectively in jail or hospital, and 3% homeless. The non-housed were exclusively those with a pre-existing severe substance abuse diagnosis.
Nieves, E. (2002, USA)	60	$\leq$ 12 months	Greater housing stability was not supported in the ACT model when compared to a Day treatment service.
Wasylenki, et al. (1993, Canada)	59	9 months	71% less use of shelters, 365% more use of permanent housing.

In four studies, levels of client satisfaction with the ACT services were examined according to the following: (a) differences on teams with peer providers (Minghella, et al., 2002), (b) differences across genders (Dietzen & Bond, 1993); (c) one model of ACT was as satisfying as the others (Bjorkman & Hansson, 2001); and (d) in comparison to no services at all (Ben-Porath, Peterson, & Piskur, 2004). Key findings were: (a) women

tended to be more satisfied with services than men (Dietzen & Bond, 1993), (b) one model of ACT was as satisfying as the others (Bjorkman & Hansson, 2001), (c) having a peer provider on the team did not enhance client satisfaction (Minghella, et al., 2002), and (d) participants were satisfied with most services with the exception of the after hours telephone system and staff efforts at vocational rehabilitation (Ben-Porath, Peterson, & Piskur, 2004).

There were improved outcomes for participants exhibiting substance misuse who received service from ACT teams. At the end of the four-year study by Meisler, et al. (1997) 59% of the participants continued to experience difficulties with illicit substances and 41% were either abstinent or "mild" users. Despite this, other research has not shown the ACT model to be superior to other case management models in promoting changes in addictive behaviours.

There were 12 studies carried out on ACT participant engagement with mental health services. Eight studies showed that increased use of psychiatric and social outpatient services was found to decrease the need for prolonged hospitalization, while also ensuring timely and necessary hospitalizations facilitated by a knowledgeable community case manager or service staff member (Ben-Porath, et al., 2004; Curtis, et al., 1992; Goering, et al., 1997; Meaden, et al., 2004; Meisler, et al., 1997; Minghella, et al., 2002; Wane, et al., 2007; Wasylenki, et al., 1993). With the exception of the study by Curtis, et al. (1992), studies supporting this hypothesis were conducted with control groups. In contrast, two studies (Hornstra, et al., 1993; Wasmer, et al., 1999) did not associate rates of engagement with any positive enduring outcomes. The researchers in

two studies comparing ACT and CCM (Lehman, et al., 1993; McRae, et al., 1990) failed to show superiority of the ACT model in this area.

CCM Teams (18 Studies)

Focus of CCM teams. As with the ACT teams, CCM staff are expected (in 2/3 of the studies) to assume a "generalist" role in providing care (counseling, medication management, assistance with social needs, etc.) to the client with linkage to or brokerage of specialized services as needed. Due to higher client caseloads (25-50 clients) CCM staff tend to operate from their offices (45%) or community health centres (55%) with a limited outreach capacity. Therapeutic rapport occurs with the individual CCM rather than the team and rehabilitation is aimed at facilitating discharge of the client to other non-medically based community services.

Individual caseloads with multidisciplinary CCM teams. Of the 18 research articles on CCM, 10 situated individual case managers (nurses, social workers, addiction specialists, etc.) within community teams. These case managers have primary responsibility for an individual caseload with access to other members of the community team for consultation or clinical group processes, as necessary. The remaining eight studies did not describe team structures.

CCM staff characteristics. CCM staff were composed of registered nurses (RNs), social workers (SWs) and other interdisciplinary professionals. RNs or RPNs were mentioned in 10 of the 18 studies with no indication of percentages of staff serving in case management or supervisory roles. Three studies made reference to "interdisciplinary teams", "interdisciplinary professions" and "health professionals" but did not elaborate on the staff mix. No reference was made to the professional or non-professional

affiliations of CCMs in four of the studies. Social workers were represented on six of the teams and other professionals on nine teams. Non-professional staff (MH workers, drivers, etc.) were represented on four of the teams.

CCM team characteristics. Having individualized caseloads may enhance therapeutic rapport with clients but large caseloads can result in decreased number of contacts available during the course of a month. The authors of the research covered in this review identified caseloads of 25-30 (N=7), 35-40 (N=7), and 50 (N=1). Two authors (Bjorkman & Hansson, 2001; Cornwall, Gorman, Carlisle & Pope, 2001) did not report caseload numbers for their team members.

The researchers found that staff on CCM teams had a rehabilitative or "curative" focus to their actions where clients were expected to aspire to their highest level of functioning. This stance is most obvious in health centres where clients present themselves for treatment. Though most of the research supported CCM functions similar to ACT, the focus tended to be with SPMI clients that were chronically, rather than acutely ill, and with planned discharges from service rather than time-unlimited care. Availability to the CCM team was restricted to the office hours set by the mental health centre with limited access to after-hours crisis teams.

Geographical characteristics. Research was carried out in the USA (44.4%), the UK (27.8%), Australia (16.7%) and Europe (11.1%). Fourteen of the CCM studies occurred in urban areas. Four rural studies were carried out in the UK, Netherlands, the USA, and Australia. There were no noted differences in the size of caseloads in rural versus urban areas. No Canadian CCM studies were carried out during the time period covered in this review.

Outcomes. CCM was more cost effective than ACT teams in three studies (Clark, Teague, Ricketts, et al., 1998; Johnson, et al., 1998; UK700 Group, 2000) and more cost effective than standard outpatient care in one study (Preston & Fazio, 2000). The only study where the researchers found no cost savings associated with CCM was an 18-month USA study (Essock, et al., 1998) in which ACT teams with caseloads of 5-7 clients were compared with CCM caseloads of 25-30. Cost effectiveness in this study was connected to the increased re-hospitalization rates associated with the two teams.

As with the outcomes report on ACT, hospital utilization rates have been reviewed as a distinct variable separate from cost effectiveness studies. The authors of CCM studies produced data indicating either no change in hospitalization utilization or increased use compared to baseline or other models of care. Five of eight studies (Burns, et al., 1999; Clark, et al, 1998; Johnson, et al.; McRae, et al., 1990; Preston & Fazio, 2000) showed no difference and the authors of the remaining three studies (Curtis, et al., 1992; Essock, et al., 1998; Habibis, et al., 2003) presented evidence showing increased hospital utilization on CCM teams in comparison to baseline or other models. The single study supporting decreased hospitalizations, by Cornwall, Gorman, Carlisle and Pope (2001), took place within a team framework targeting the most severe SPMI clients and with access to a dedicated stand-alone admission unit. The clients had access to three or more workers depending on the complexity of the illness.

Engagement with mental health services was measured in six studies. The authors of four studies found that engagement with services increased for those clients seen within a CCM team. However, the study by Sytema, et al. (2007), comparing participants on ACT versus those on CCM teams, produced data supporting superior engagement

with community services for clients on ACT. McRae, et al. (1990), however, saw no difference in service utilization from baseline between CCM and ACT teams. These last two studies compared ACT teams with caseloads of 9-10:1 with CCM caseloads of 30-50:1. Satisfaction with services was examined by Bjorkman and Hansson (2001) who found that SPMI clients showed similar levels of satisfaction with CCM, ACT, and SBCM models of care and that a higher pre-intervention measure of QOL was positively correlated with higher levels of satisfaction post-intervention.

Substance abuse and incarceration rates were examined in four studies. Both ACT and CCM teams were positively correlated with significant reductions in substance abuse in two studies (Clark, et al., 1998; Essock, et al., 2006), though Lehman et al. (1993) found no such evidence. ACT teams were found to be superior to CCM teams in the reduction of incarcerations and increased time spent in stable housing in the community (Essock, et al., 1998), although Walsh, et al. (2001) found no difference in the incidence of violence for participants of CCM or ACT teams.

Personal and social functioning was measured using scales such as the GAF and the SLOF scales and both types of functioning were correlated with QOL scores in study participants. Four studies (Bjorkman & Hansson, 2001; Burns, et al., 1999; Essock, et al., 2006; Sytema, et al., 2007) comparing CCM to SBCM and/or ACT found no differences between teams in post-intervention functioning compared to baseline measures. However, a fifth study (Jerrell, 1995) indicated improvement in psychiatric symptoms in CCM participants compared to clients on ACT teams. When caseloads decreased, as in the case of Habibis, et al.'s (2003) study, staff on the CCM teams were able to provide

more assertive care with improvements in Life Skills Profile (LSP) and GAF scores. (See Appendix C for a description of these and other scales used.)

SBCM Teams (5 Studies)

The SBCM model most closely resembles the ACT teams in terms of assertive outreach and intensive contact, with caseloads varying from 9-20 clients per case manager. Caseloads are assigned to individuals rather than to the team. Unlike the ACT or CCM model that partially target clinical needs within a treatment model, SBCM targets rehabilitative outcomes as most desirable. Access to medical and social supports is brokered or liaised with other resources.

Unfortunately, there are only five urban studies (three in the USA and two in Europe) discussing client outcomes on teams providing SBCM. The authors of two of these studies (Barry, et al., 2003; Bjorkman & Hansson, 2001) compare SBCM to other models and three others (Bjorkman, Hansson, & Sandlund, 2002; Macias, et al., 1994; Ryan, Sherman, & Bogart, 1997) compare client outcomes from baseline to the end of the SBCM intervention. Macias, et al. (1994) found the increased contact with SBCM staff resulted in improved psychosocial functioning, decreased re-hospitalization and fewer crisis service contacts. Though there are insufficient studies to make generalizations about the SBCM teams, I will summarize the findings of those available.

Focus of SBCM teams. The generalist case managers are expected to focus on the individual strengths of each SPMI client and liaise with rehabilitative resources in the community (Barry, et al., 2003; Macias, et al., 1994). There is an emphasis on skills training (Bjorkman & Hansson, 2001; Macias, et al., 1994; Ryan, et al., 1997) through

assertive outreach, individualized goal setting, and the establishment of a therapeutic relationship.

SBCM staff characteristics. In three studies (Bjorkman & Hansson, 2001; Bjorkman, et al., 2002; Barry, et al., 2003), RNs and SWs were the primary case managers working with the psychiatrists assigned to the team. One study (Ryan, et al, 1997) failed to report staff characteristics and the other study (Macias, et al., 1994) referred to staff as half- time baccalaureate level health professionals. In two studies (Barry, et al., 2003; Macias, et al., 1994), nurse's aides and other non-professional staff were members of SBCM teams. Though SBCM was described (Rapp, 1998b) as embedded within a supportive team, no such characteristics were discussed in the research literature.

Outcomes. Though there was no research that assessed the cost efficiency of SBCM, the authors of three studies (Barry, et al., 2003; Bjorkman, et al., 2002; Macias, et al., 1994) tied reductions in hospital admissions and LOS with cost effectiveness. These data show that SBCM decreased hospitalization from baseline. Bjorkman and Hansson, (2001) found both ACT and SBCM effective in reducing hospitalizations, with ACT outperforming SBCM in this regard. Participants in the five SBCM studies stayed in the community longer, were seen as more productive (by case managers and family), and had improved moods, but there was inconclusive evidence that they functioned better either socially or clinically. Ryan, et al. (1997) found that those clients who received housing and financial support and skills training early in the relationship required fewer services than those receiving these benefits later in the relationship. SBCM was not found to be

superior to other models of care in terms of client satisfaction, service utilization, or overall health of the participants.

Summary

The SPMI samples were a heterogeneously diagnosed mixture of participants. Researchers, for the most part, used purposive sampling and their dropout rates were significantly high. Overall, psychotic illnesses were more predominant in the ACT and CCM study samples than in SBCM studies. Variables such as substance abuse, incarceration, and homelessness helped to identify rehabilitative outcomes in each model. Only ACT studies addressed medical co-morbidity.

In this 17-year review of the literature, from 1990-2007, the majority of studies examined ACT teams (89.4%). Fewer studies evaluated CCM (38.3%) or SBCM teams (10.6%). SBCM was the least rigorously researched of the three models despite its current popularity as a rehabilitative model in a number of psychosocial journals. With the exception of one study (Macias, et al., 1994), all SBCM research was carried out between 1997-2003. Two of the five studies were comparative (with ACT & CCM models) and the remaining three were pre-post intervention studies. It is doubtful that any generalizations can be applied to the outcomes reported from these five studies given the lack of replication and varying sample characteristics. In all models, there were increased desirable outcomes with lower caseloads, assertive outreach, targeted interventions (e.g., substance misuse, homelessness, decreased psychosocial functioning) and timely access to psychiatrists and health professionals (i.e., extended work days).

Information will be synthesized in Chapter Five to identify what is known about the current literature and what needs to be explored further. It is this final phase of the

review that will be sifted through my experiential knowledge to help inform mental health and addictions practice.

Chapter Five

The Descriptive Review

My original purpose in conducting this review was to gain some professional clarity about how various MHCM models were developed and utilized with SPMI clients. Through an analysis and synthesis of available experimental and evaluative research, I was able to determine the professional characteristics, caseload size, focus, population of interest, and the observable outcomes of each model in various communities around the world, with varying degrees of certainty. Rather than simply looking at outcomes, I needed to see how the make-up of various models influenced the end results within the context of other available resources.

The ACT teams reviewed were predominantly multi-disciplinary in nature, with RNs or RPNs in staff or supervisory roles. Social workers and other professional staff were represented on one third and psychiatrists on half of the teams. The two studies reporting non-professional staff and a single peer-provider study represented too small a sample to gain any predictive outcomes based on their effect. The focus of most of the teams was three fold: (a) to avoid unnecessary hospitalizations, (b) to enhance housing, financial and social stability, and (c) to develop therapeutic relationships with hard-to-reach SPMI clients. These goals were achieved by MHCMs advocating for engagement with needed medical, social, vocational and educational supports. Those participants who functioned most poorly at baseline seemed to benefit most from ACT service. Specialized interventions such as substance abuse treatment were beneficial when provided by the ACT team. The usual size of an ACT caseload was 10-15 clients per staff member.

The information obtained through this review is clearly divided on the cost-effectiveness of ACT teams over other models of care. Hospitalization rates were not found to be significantly lower in one half of the studies. Based on my findings, there are five global outcomes that can be expected from urban ACT teams (rural teams represented too small a sample to be generalizable to other areas): (a) improved psychiatric, personal, and social functioning, (b) greater housing stability, (c) greater satisfaction with services, (d) increased control over substance misuse, and (e) better engagement with mental health and community services.

The CCM teams were also predominantly multi-disciplinary in nature, with RNs or RPNs represented as staff in slightly more than half of the studies. Social workers were included in one-third of the teams and other professionals (psychologists, OTs, addictions specialists, etc.) on half of the teams. As with the ACT teams, the focus of most CCM teams is to avoid unnecessary hospitalizations, enhance housing, financial and social stability, and develop therapeutic relationships with hard-to-reach SPMI clients. With CCM teams, a single clinician provides most of the counselling, education, and substance use treatment and advocates for medical, social, and vocational supports to achieve client goals. The average size of a CCM caseload ranges from 25-50 clients per staff member.

CCM was found to be a cost effective alternative to routine outpatient care though the number of studies supporting this is limited. Despite hospitalization rates that were either the same as at baseline measurements or somewhat higher, CCM was cost-effective when compared to other models of aftercare in terms of caseload sizes, treatment outcomes and service utilization. Based on my findings, four global outcomes can be expected from urban or rural CCM teams: (a) cost effective alternatives to other

models of care, (b) improved psychiatric, personal, and social functioning, (c) enhanced engagement with mental health services, and (d) increased control over substance misuse.

RNs, SWs or other health professions predominantly staffed the SBCM teams. A psychiatrist and clinical supervisor direct the teams and broker services, as needed, from health and community resources. A single clinician working with 9-20 clients provides a high level of contact to SPMI clients and gets more positive rehabilitative results if housing, finances and other supports are provided early in the therapeutic relationship. Within a limited number of studies, those receiving SBCM service experienced fewer hospitalizations (Barry, et al., 2003; Bjorkman, et al., 2002; Macias, et al., 1994) but when compared to other models, no significant reductions in symptomology (Barry, et al., 2003; Macias, et al., 1994) or improvements in personal or social functioning.

In summary, assertive and clinical case management models were associated with improved functioning, decreased substance use, and increased engagement with community services. In addition, assertive models were also associated with increased satisfaction with services and housing stability and the clinical model was associated with increased cost savings. The authors of five studies on the strength-based model did not generate enough data to make generalizations about the research findings. Caseloads of 10-15 on ACT teams, 9-20 in SBCM and 25-50 in CCM were associated with the outcomes achieved.

Limitations of This Review

The study findings of the previous chapter were analyzed without commenting on the limitations of such research. Rather than conducting RCTs, close to three quarters of the reviewed studies used purposive sampling. This method of participant sampling relies

on the personal judgment of the researcher in selecting subjects thought to be representative of the population (Polit & Beck, 2004) and can include larger than representative numbers of participants that are either more willing or functional than those refusing to participate. Purposive sampling is often a more successful strategy than random sampling when high percentages of client participation are sought, however, even with the use of purposive sampling, drop out rates in the reviewed studies were consistently high (5% - 54%). Given the lack of true experimental studies available for review coupled with the asocial characteristics of many SPMI participants, the RCT studies that were available are too few (six ACT and two SBCM studies) to gain long-term predictive qualities in program outcomes.

As with any study, some thought needs to go in to what is studied and how results are presented in this review. Though each research paper divulged the ethical process they went through and the approvals they received, they did not address the broader issues involved in providing evidence that fails to acknowledge the context of how that knowledge was generated. For example, the authors detailed the demographic and diagnostic variables of accepted study participants. They did not provide detailed demographic or clinical information on the up to 44% of clients (Ryan, et al., 1997) who did not participate (382 out of an original sampling of 712).

The passage of time and dissemination of MHCM literature has had an effect on the implementation and outcomes of particular MHCM models. Office-based CCM models of the early 1990s (Jerrell, 1995; McRae, et al., 1992) have given way to a more assertive approach in some areas that reaches out to clients in need in the community. ACT teams have added vocational and addictions counselors to help in rehabilitative

efforts (Macias, et al., 2006; Nieves, 2002; Preston, 2000; Schonebaum, et al., 2006; Solomon & Draine, 1995b). Psychiatric day hospitals, supported housing, and sheltered employment and volunteer services have blurred the boundaries between the outcomes achievable by any one group. SBCM has many of the characteristics of ACT and CCM teams (lower staff/client ratios, individual counselling, and community outreach) with SPMI clients who may exhibit a higher rehabilitative potential (Barry, et al., 2003; Bjorkman & Hansson, 2001; Bjorkman, et al., 2002; Macias, et al., 1994). With comparable staff/client ratios, community outreach, local clubhouses and day hospitals, and similar therapeutic approaches, it may soon become difficult to prove the effectiveness of one model over another in achieving outcomes.

Some experimental studies started with inexperienced teams that needed training in providing care based on the characteristics of the models used. This lack of experience was balanced with the increased passion newly trained staff may bring to an experimental study they are hoping will succeed. As the staff gains proficiency, clients benefit from increased attention, and outcomes may be expected to change. Increased productivity resulting from increased attention was observed in Elton Mayo's study on a group of female workers in the Hawthorne Works factory (Hsueh, 2002). Likewise, those with SPMI may benefit from increased attention associated with any model that has a low staff-to-client ratio. It is hoped that comparison studies on caseload size will identify the risk of a Hawthorne effect in these populations.

Finally, though my original intent was to discover enduring outcomes in each MHCM model, the reality was that three quarters of these studies lasted only nine to twenty-four months. Considering the difficulty in establishing a therapeutic rapport, and

the value of such in promoting healthy behaviours in those with SPMI, studies of a longer duration would be preferable.

Areas for Further Research

Measuring model fidelity. With the exception of determining caseloads, there was little research that looked at the content of health services being provided to participants. Some research measured the number of contacts in a given week or month but did not discuss the nature of that contact. This generic attention to contacts failed to measure the availability of medical oversight, housing, day programs, hands on life skills training, addictions counselling and other services, where availability could differentially and significantly impact the success of any model of care (Lloyd-Evans, Johnson, & Slade, 2007). The use of the Dartmouth Assertive Community Treatment 5-point Scale ([DACT] (Salyers, et al., 2003) for ACT teams was the only fidelity scale used for any model.

CCM and SBCM currently have no measures by which to compare outcomes to team structures and activities. In fact, there are few studies on CCM models that have caseload ratios of ≥35:1 despite the prevalence of ≥50:1 ratios in many areas of North America. So while some data is available, it would not be accurate to generalize the results in situations where the caseload size may be markedly greater. European and British studies do not support reductions in admission rates or length of stay for ACT teams compared to CCM teams (Bak, et al., 2007). Given the information provided by the authors, this effect may be due to the lack of distinction between ACT and CCM in terms of focus and number of contacts; i.e., there appear to be lower client to staff ratios in CCM outside of North America resulting in less distinct differences in model practices.

Understanding variation in client outcomes. As discussed in the first chapter, variation in defining SPMI continues to muddy the generalizability of research findings due to the heterogeneous nature of the clientele served. The study by Slade, Powell and Strathdee (1997) compared definitions of SPMI in 20 agencies versus 20 research studies in England, using 25 indicators under four headings: diagnosis, disability, duration and abnormal behaviour. SPMI defined in the research described those having any psychiatric disorder (only 45% of whom had psychosis only), requiring specialized services and having a history of previous mental health admissions (as noted in 35% of the reviewed studies) or prolonged duration or contact with mental health services. In 60% of the reviewed studies, SPMI was used to describe clients that had any psychiatric disorder with demonstrated disability in daily living skills, social functioning, dependency on caregivers and requiring specialized services. Physical disability was considered in two studies as inclusion criteria for a diagnosis of SPMI. In one of these studies, the majority (96%) of the participants were male, all were homeless, and half had a forensic history (Barry, et al., 2003). Having numerous disabilities can influence access to needed resources and slow down rehabilitative efforts requiring greater mobility.

Differences in psychiatric diagnosis can also affect outcomes. Schizophrenia is considered a life-long illness characterized by a gradual decline in clinical, social, affective and personal functioning, only partially mediated by continuous use of antipsychotics (Harvey, et al., 2006). The chronic nature of schizophrenia is well documented and supported through medication regimes designed to stabilize or mediate troublesome symptoms. There are clinical assumptions, regarding SPMI clients diagnosed with schizophrenia, that are based on biochemical as well as physiological

changes in the brain resulting in cognitive and affective deficits (Burbridge & Barch, 2007; Laws, Leeson, & McKenna, 2006; Schultz, North, & Shields, 2007). Cognitive deficits such as decreased executive functioning, poor memory, and disorganized thought are paired with overt delusions and affective indifference. Extremely low mood and motivation in terms of self-care or rehabilitative efforts are a hallmark of this disease.

In comparison, SPMI clients diagnosed with Bipolar Disorder have illnesses marked by episodes of mania and/or depression interspersed with periods of remission. The goals of treatment are to treat these symptoms and also reduce relapses so that the client can resume a relatively normal life (Chung, et al., 2007). Unlike those diagnosed with schizophrenia, those with Bipolar Disorder frequently have very supportive family involvement and are quite functional when their symptoms are well controlled. Though chronic in nature, the focus of care for those with Bipolar Disorder is treatment of co-morbid conditions (frequently anxiety disorders and substance abuse), psychoeducation to help manage periods of decompensation and reinforce medication compliance, occupational and educational rehabilitation, and re-integration into the community. A diagnosis of chronic depression leads to a similar, though less intense, focus of care.

The SPMI population is a heterogeneous mix with vastly different levels of functioning and ability to engage in services or therapeutic relationships. Given the differences in functional capabilities in different diagnostic groups, it would be unreasonable to expect similar levels of outcomes success in trials when percentages of subgroups are significantly different. Though eight studies approached 100% diagnostic homogeneity for psychosis (Harvey, et al., 2002; Johnson, et al., 1998; McRae, et al., 1990; Preston, 2000; Sytema, et al., 2007; UK700 Group, 2000; Walsh, et al., 2001;

Wane, et al., 2007), they were too few to generate any predictive comments within differing foci and models of care.

System (Process) Versus Client Outcomes. As was indicated in the previous chapter, the outcomes most commonly described in all three models were those that were economic or systems driven. Rates of hospitalization and comparisons of model costs speak more to economic accountability than improvement in client functioning. In practice, MHCM focuses on illness assessment, medication response, and treatment/crisis interventions. The desirable outcomes measures are decreased symptom acuity and improved functioning as measured by less frequent or reduced-stay hospitalization and placement/maintenance in stable housing (Bruce & Paxton, 2002; Geanellos, 2004; Hopkins Ramsundar, 2006; Wong, 2006). The outcomes are medically and pharmacologically driven and are seen as the first line of care for acutely ill clients living in the community. For the CM, it is imperative that clients are accurately assessed for symptoms of decompensation so that interventions are put in place if clients are a danger to themselves or others.

Many of the research articles used in this review seem to value outcomes that may fail to represent client health. Outcomes such as decreased incidence and length of hospitalization seem to serve the interests of the institute rather than the client who is discharged back into the community with overt and troublesome symptoms. Outcomes of decreased psychiatric symptoms may seem a desirable outcome to health professionals but may not be so to the client who is so sedated by his medication that he sleeps 14 hours a day, can’t remember medical appointments and is unable to find the energy to care for himself or his home. Though cost effectiveness and reduced hospitalization may

be indicators of improved community tenure of those with SPMI, research focusing on interventions to improve functioning would more appropriately address quality of life for these persons.

Different populations need different interventions. As mentioned above, the cognitive and social effects of Bipolar Disorder and Schizophrenia are vastly different, therefore participant samples that are heavily weighted toward one group of clients over the other may have implications for service use, psychosocial functioning, satisfaction with services, and other outcomes. Using past hospital use as an indicator of SPMI is not in and of itself sufficient evidence of persistent illness. Persons newly diagnosed with schizophrenia or affective disorders can initially experience a prolonged period of denial resulting in high hospitalization use. Conversely, hospitals may be seen as undesirable places for others who may avoid hospitalization even when their need is great. As the disease progresses, functional levels decrease, cognitive abilities become more impaired, and the ability to form therapeutic relationships becomes more difficult. Withdrawal of case management would be inadvisable for this SPMI population.

Those with a bipolar or depressive disorder can expect a full or partial remission of their illness once they are stabilized on medication. It is realistic to use the intensive contacts of an ACT or SBCM team to provide educational and vocational support to quickly return these clients to near-baseline functioning and then withdraw during periods of well-being. Such clients tend to have more stable housing, respond well to medication and utilize non-health supports during well periods. Family counselling is useful in providing family members with the skills they need to identify periods of decompensation and to help support the client in the community.

An older, homeless population of clients diagnosed with schizophrenia would be expected to have severe cognitive deficits precluding the intensive rehabilitative focus used in the example above. Expecting those with a long history of memory loss, poor organizational skills, and low motivation to actively engage in psychosocial rehabilitation is unlikely to result in successful outcomes and may erode the trust this population needs to establish with caregivers. For this population, outcomes that include stable housing, medication compliance, harm reduction and service engagement would be a more appropriate focus of MHCM teams.

Medical Co-Morbidity. From a holistic health viewpoint, the physical needs of the SPMI population cannot be separated out from the psychiatric care given. The lowest estimate of mortality rates for SPMI puts the expected age of death at 10 years sooner than the general population (Muir-Cochrane, 2006; Robson & Gray, 2006). Other reports have set mortality rates as high as 25 years shorter than the general population (Picard, 2007). In a study by Miller, Paschall, and Svendsen (2006), the authors found that 67% of the 608 deaths occurring in a SPMI sample in Ohio over a four-year period occurred between the ages of 35-64. Only 14% of the deaths occurred after the age of 65. It would be accurate to admit that those with SPMI can expect to die at a much younger age than the rest of the population.

Persons diagnosed with schizophrenia are more likely than the general population to have heart disease, diabetes, hypertension, asthma and gastrointestinal disorders (Jones, et al., 2004). They are more likely to smoke, abuse substances, eat poorly, and lead sedentary lives (Muir-Cochrane, 2006). The use of newer atypical antipsychotics has compounded weight gain resulting in decreased self-esteem and isolation, in turn

resulting in even lower levels of physical activity. Though the incidence of chronic illness in this population may be comparable to other groups, they are unique in their collective lack of ability to access needed health resources in a timely manner. Since this population clearly requires greater medical oversight, MHCM should include regular and consistent follow up to assess the need for physical care and/or medical intervention.

Nurses' roles in MHCM. As was seen in earlier comments, the majority of MHCM multidisciplinary teams studied included RNs as members of the team. Unfortunately, none of the researchers provided information on the day-to-day activities of these or other professionals. The authors spoke of generalist job descriptions, numbers of contacts, and assertive outreach but failed to say what occurred during these contacts. Given the high percentage of nurses on MHCM teams, it seems reasonable to assume that RNs are expected to utilize their formal and experiential knowledge to provide medical expertise and assessment while performing other generic activities. As Picard (2007) noted, the body should not be sacrificed in the treatment of mental illness. Yet, my own experience working with many RNs in mental health is that they choose to provide psychiatric care only, and may be quite resistant to providing physical care as needed.

When staff positions on a MHCM team are generic, with shared roles and responsibilities across professional lines, there can be benefits such as a shared caseload, skilled staff coverage during absences and equal distribution of workload. However, Robson and Gray (2007) believe that there is a "lack of clarity about whose role it is to provide health promotion (and) detect and manage physical problems in people with SMI" (p. 459). Though they recommend that such services be provided by GPs, they believe that secondary mental health services should provide this care if the client refuses

to see a medical-based physician. The only professionals having the formal education and accountability for this oversight are the psychiatrists and nurses associated with the teams.

Nurses are well positioned to provide bridging between psychiatric and medical health care facilities for mental health clients. A therapeutic and trusting relationship combined with hospital systems knowledge allows nurses to help clients navigate both systems. In addition to administering and assessing the effects of neuroleptic medications, Muir-Cochrane (2006) believes that "comprehensive general health assessments (should be) carried out as a matter of course" (p. 450) by a nurse, including regular monitoring designed to screen clients for obesity, diabetes, hypertension, and cardiomyopathy. Such expectations should be clearly spelled out in MHCM policy.

Conclusion

The information contained in this review suggests that further research is required to address the continued health challenges of those with SPMI within a global definition of SPMI. The research review was quantitative in nature and as such may lead readers to believe that the results can be generalized to SPMI populations. In order for research to be seen as dependable, experimental study requires predictable populations of similar etiology to which predictable interventions (i.e., MHCM activities) are applied, with measurement by predictable instruments at the pre - and post-intervention stages. Instead, a comparison of MHCM models with unknown fidelity or models that are poorly defined, working with heterogeneous populations of varying capabilities, leads to uncertain outcomes with little in the way of predictive results.

Researchers using the ACT model have consistently failed to address fidelity issues and the role of MHCM staff professionals, such as what nurses provide to clients, the roles of social workers, time each ACT member is expected to spend with clients, and the physical health needs of their clients. Though client satisfaction has been addressed, it has been measured against either no outpatient care or minimal care within a large caseload, that is, caseloads common to CCM.

The CCM model is often referred to as “standard” community care, with roles determined either locally by health administrators or by psychiatric direction. Best practices are assessed based on the individual case manager’s ability to keep clients out of the hospital. The way in which this is achieved seems arbitrary at best. Though professional bodies regulate the education and practice of RNs, SWs, and other professionals on MHCM teams, no such guidelines are in place for non-professionals who must rely on the direction of others on the team.

The SBCM model, the newest and least rigorously researched of the three models, seems an ACT hybrid used for SPMI clients who are deemed more functional at baseline and therefore more amenable to rehabilitative efforts. Early successes at decreasing hospitalization and increasing functioning may be more a result of purposive sampling, client motivation and higher baseline functioning, than a reflection of the efficacy of the model.

The outcomes addressed in this research more closely reflect the expectations of the community, administrative and professional stakeholders than the needs of the client. Keeping SPMI clients out of the hospital may decrease hospital costs without improving the health of clients; subsidized housing may decrease the homeless street population but

increase exposure of addicted lifestyles to vulnerable SPMI populations; and decreased caseloads may increase the contact MHCM staff have but lead to infantilizing of clients rather than being rehabilitative efforts.

MHCM originally started as a way to provide comprehensive, supportive care to institutionalized SPMI patients who wanted to return to their communities. Over time, the original broker model (BCM) was modified to better meet the community and outreach needs of those with SPMI. Though much progress has occurred, health authorities still struggle to find ways to meet the health and community needs of mental health clients. It is time to take note again, through rigorous research, of what is working for this population and what is not. To that end I make the following recommendations.

Recommendations for Discussion, Research, and Practice

1. That definitions of SPMI be universally accepted, with interventions targeted appropriately to the functional capabilities of subgroups in that population.
2. That models of MHCM be clearly and consistently defined, based on caseload size, professional composition, and foci of care, role expectations, and desired outcomes.
3. That future research takes into account the amount of community support available/not available to case managed clients (e.g., housing, day programs, meal programs, physician over-sight, etc.), in determining the efficacy of various MHCM team compositions within those communities.
4. That nurses take a more pro-active and visible health promotion role on MHCM teams.

In this review, I identified a large amount of research available to clinicians to support the development of MHCM teams in a community setting. Unfortunately, inconsistencies in sample size, sample and model characteristics, and community

resources available to each study group makes generalization or predictability of the findings difficult. However, given the findings of this literature review, I see a number of activities that I can engage in as a nurse, educator and leader.

As a nurse, I can holistically assess the needs of the SPMI population and advocate for the resources that they see as valued. If clients are unable to find a general practitioner on their own, or refuse to see one, I need to provide medical oversight and help them access the assistance they need to attain a healthy lifestyle. I also need to ensure that a physical assessment of clients is a staff expectation for those I supervise. This can be accomplished by providing staff with research indicating the incidence of medical co-morbidity in the population they serve and helping them develop the skills they need to carry out such assessments.

As a researcher I see the need to articulate the role of MHCM to other health disciplines, clients, families and communities. By identifying the focus and expected activities of staff within various models it may be possible to predict outcomes reliably in this population. Conversely, if others believe that MHCM staff fulfill all health roles, there will be no impetus to develop the community resources necessary to support rehabilitation efforts.

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Appendices

Appendix A: Case Management Research Conducted Between 1990-2007

Date/Authors	Methodology	Model & Staff Mix	Results	Comments
2007/Bak, van Os, Delespaul, de Bie, Campo, Poddighe, & Drukker **(Not Used)**	The researchers conducted **pre-post outcomes research** on two cohorts of ACT participants over a 3-year period.	**F-ACT**	The model being investigated was called the "Function-ACT (F_ACT) and was developed to be a hybrid of the psychodynamic activities of CCM and the assertive qualities of ACT. This model allowed for more assertive activities when needed and psychodynamic therapy when the client is more stable. A lower caseload of 15-20:1 aids the staff in providing more intensive assistance when needed. **Could not use due to lack of fidelity to the models under study.**	An interesting model and should be further investigated for possible implementation in other geographical areas.
1. 2003/Barry, Zeber, Blow & Valenstein	**Evaluative research** on the effects of ACT and SBCM on client health-based outcomes. The final purposive sample included 81 participants in SBCM and 93 participants in ACT of the 225 originally enrolled. All were heavy users of acute mental health services (hospitalized ↑150 days in the last year or ↑4 admissions in last year).	**ACT & SBCM** Physician, nurses, social worker, nurses aids	Service Utilization: Both teams led to increased outpatient psychiatric care (though SBCM was significantly higher) and outpatient visits. Both showed significant reduction in hospital length of stay (LOS) though the ACT group was greater, SBCM participants decreased inpatient medical care whereas ACT groups slightly increased use (see age difference in 'Comments' section). Clinical Outcomes: Significant improvement in BPRS scores in SBCM over ACT. Both showed significant improvement in	The 174 participants, 85.6% were diagnosed with schizophrenia, 11.5% with affective disorders and 2.9% with dementia. Raters were trained in the use of the Brief Psychiatric Rating Scale (BPRS), the Global assessment of Functioning (GAF) and the Instrument Activities of Daily Living (IADL). Inter-rater reliability was established on these scales. Total inpatient days, outpatient visits, inpatient medical visits and MH residential use were measured. Of note in the participant sample were the preponderance of male subjects (96.6 %) and the relatively low incidence of alcohol

			positive symptoms but SBCM was superior to ACT in reducing negative symptoms.	& drug dependence (27%) and differences in mean age between the groups (ACT-53.6/SBCM-44.9). Clozapine was used more often in the SBCM group.
2. 2004/Ben-Porath, Petereson, & Piskur	This **pre-post outcomes study** compared the clinical and social outcomes achieved by 69 clients after three years in an ACT program compared to outcomes 1-year pre-ACT. Data on hospital and ER utilization was obtained through clinical and administrative documentation. Data on client & family satisfaction was obtained through use of Likert-like satisfaction scales.	**ACT** Physician, RNs, SWs, vocational counselors & case managers	An overall reduction of 72% in hospital bed-days and 86% in ER contacts at three years post-intervention compared to 1-year pre-intervention. In addition, there was a significant increase in attendance at psychiatric appointments (117% increase). Clients reported increased satisfaction with ACT case managers and the services they received but were not satisfied with the telephone on-call system or case managers' vocational endeavors.	55 purposively sampled participants were diagnosed with SPMI on Axis I (DSM-IV[R]), 83.6%of whom were diagnosed with schizophrenia. They were equally gendered, had a mean age of 40 (ranging from 24-61), and had a mean education of 13+ years. 98% were unemployed. The results of the family interviews are not included here due to the small number who agreed to be interviewed (18 persons).
3. 2001/Bjorkman & Hansson	The researchers of this **18-month Swedish evaluative outcomes study** looked at relationships between case management services and levels of client satisfaction within those services. Three of the ten services were CCM, one was considered ACT and the remaining six fit the criteria for SBCM. The client's needs for care were measured using the Camberwell Assessment of Needs (CAN) interview, the social network was measured using the Interview Schedule for Social Interaction (ISSI), psychosocial functioning was assessed using the Strauss-Carpenter scale and GAF, and quality of life was measured using the objective and subjective Quality of Life scales (QOL).	**ACT** **CCM** **SBCM** RNs and SWs	No significant differences were found in overall satisfaction with the 10 CM services. Clinical needs/psychosocial functioning was not related to client satisfaction, however, better initial QOL and a better social network at baseline was associated with a higher satisfaction with the case manager and the level of support received. Clients were more satisfied with female staff, but showed no preferences for age or educational background. More interventions related to physical health, advocacy and housing concerns were correlated with higher levels of satisfaction.	There were 154 participants purposively sampled from 252 clients seen at ten services scattered throughout Sweden. The authors did not present data for the demographic and clinical variables of the different groups. Allthreeservices: operated Monday-Friday during daytime hours with access to a case manager after hours, emphasized community outreach (out of office 70% of the time), and provided similar referral, brokerage, advocacy, and ADL support. **NB** The authors did not discuss caseload ratios or staff composition of the three teams, which could affect the type and number of contacts carried out.
4. 2002/Bjorkman, Hannson & Sandlund	**A 3-year randomized control trial to evaluate** the effects of SBCM **on** service and clinical/social outcomes in participants diagnosed with SPMI.	**SBCM** 2 RNs & 2 SWs psychologist & psychiatrist	There was no difference in clinical or social outcomes at any point between the two groups. The SBCM group had significantly reduced LOS and needs for care and were more satisfied with the care they	Participants with an alcohol or substance use disorder were excluded. There were 77 clients diagnosed with a mental illness that severely affected social, residential, or occupational functioning and were randomly assigned to the SBCM group or

			received.	the control (standard care) group. Participants in the SBCM group had significantly worse social networks, more symptoms and lower scores on global well-being scales at baseline than did the control group.
1990/Bond, Witheridge, Dincin, Wasmer, Webb, and De Graaf-Kaser **(Not used)**	This 1-year **pre-post-intervention evaluation** compared outcomes for 58 participants receiving ACT follow-up to those receiving follow-up through a drop-in centre.	**ACT**	Though the authors indicated significant housing, psychosocial functioning and stable housing gains, there were serious flaws in their sample selection and data collection. **As such, these results will not be used.**	The study initially consisted of 88 participants randomly assigned to either ACT (N=45) or the control (N=43). The final samples used for ACT and Control groups were 75% and 56% respectively. In addition, clients lost to contact in each group had significantly higher levels of hospital use pre-intervention, perhaps indicating a more serious level of SPMI than those that remained in the study. The authors admitted that some interviews were only partially completed because clients had trouble concentrating on the questions.
5. 1999/Burns, Creed, Fahy, Thompson, Tyrer, & White.	2 year **evaluative outcomes research** designed to assess the effectiveness of the ACT model compared to a standard CCM control group in outcomes of clinical symptoms and social functioning. The participant sample was obtained from 4 urban MH centres in London and Manchester, England between February 1994 and April 1996. Interviews with participants were scheduled at 1-year and 2-year post-randomization. Case managers were mostly MH nurses but also included, occupational therapists (OT), MH support workers, and psychologists. The CCM team had twice as many senior grade nurses, 1/3 as many OTs and similar numbers of other staff.	**ACT:** 56% RNs, 24% OTs, 12% MH workers, 8% other professionals **CCM:** 69% RNs, 13% OTs, 13% MH Workers, 5% other professionals	The authors found that early discharges from the hospital were only possible if the CM team had direct medical responsibility for the discharge. When hospital personnel control discharges, there may be delays due to misperceptions about the level of support that will be available to clients on ACT teams. In view of the above, There were no significant differences between the two groups in regard to gains in clinical or social functioning. 15 of the participants (2%) died during the 24month study.	708 clients diagnosed with serious and persistent psychosis were randomly assigned to participate in the study. Those diagnosed with an organic brain injury or substance abuse were excluded. Both groups were well matched for age, admission history, clinical diagnosis, gender, social functioning, and QOL scores at baseline.
6. 2004/Calsyn, R., Morse, G., Klinkenberg, W., & Lemming, M.	**An evaluative randomized experiment** to determine the relationship between the working alliance in ACT and outcomes measures of: stable housing, income, self-	**ACT** Not Discussed	The data generated in the study indicated that client views of the working alliance did not correlate with CM views at 3 months or 18 months.	The 98 participants were 67% schizophrenia/schizoaffective disorder, 9% atypical psychosis, 2% delusional disorders, 13% bipolar disorder, & 9% depressive

	report of psychiatric symptoms, self-report of substance use, and interviewer rating of severity of substance use. All 98 participants were diagnosed with SPMI and a substance use disorder. The authors used the Working Alliance Inventory (WAI) a tool formerly used to measure the relationship between to determine engagement between counselors and MH clients.		There was positive correlation between the client's 3 month and the CMs 18 month view of the alliance, and the outcomes for housing stability and reduction of psychiatric symptoms.	disorders. The WAI was designed to assess the psychotherapy relationship (i.e., a counseling relationship) so its application with an assertive outreach approach may not be useful. The nature of ACT teams is to provide care to SPMI clients who are not able to access MH care, are non-compliant with treatment, or are difficult to follow using traditional CM models. Such a population may avoid a working relationship with any health professional.
2004/Chue, Tibbo, Wright, and Ens. (Not used)	.	**ACT** Subprogram		The research article examines a community support facility used by persons on an ACT team.
7. 1998/Clark, Teague, Ricketts, Bush, Xie, McGuire, T. et al. (1998	3 year **experimental study** evaluating the effectiveness and social costs of CCM & ACT. 193 participants from 2 urban andfiverural health authorities were randomly assigned to either CCM or ACT. Interviews of participants and caregivers were carried out at baseline and 6-month intervals. In addition, data was obtained from charts, provider information systems, Medicaid, law enforcement agencies and community service providers. Outcomes assessed were: cost-effectiveness, drug use, hospital utilization, forensic involvement, shelter use, and family burden.	**ACT** **CCM** RNs, SWs, psychologist, psychiatrist. (percentages not available)	Both ACT and CCM groups were similarly successful at reducing substance use and engaging in drug & alcohol treatment. Likewise, scores for subjective QOL were improved for both groups. Though there was a trend towards lower costs in all social and other areas for ACT, the differences were not considered statistically significant. The study indicated that participants that entered either program at a higher level of addictions treatment and/or a lower level of pre-study costs were more cost efficient to treat than the other participants. 7 participants (3.6%) died during the study	Data from 193 participants were obtained from an original enrollment of 223 persons (ACT N=100; CCM N=93). The authors assessed substance use/dependence (SATS), subjective quality of life (QOL), resource use, community & health service costs, administrative transfer costs, legal costs, and informal caregiving & support costs at 6-month intervals. SPMI was defined as schizophrenia, schizoaffective disorder or bipolar disorder (this population also had diagnoses of substance misuse)
8. 2001/Cornwall, Gorman, Carlisle & Pope	**A 3-year evaluative study** using naturalistic methodology to look at CCM outcomes within a Care Programme Approach (CPA) framework developed in England. The CPA provides for a nine-bed stand-alone admission unit, a multidisciplinary early intervention service,	**CCM** 12 RNs	Those clients found to be lower functioning (↓GAF) received care within a team approach while the higher functioning tended to need only a keyworker. The researchers found that utilizing CCM within a team approach provided	The CPA covered 334 clients with psychotic illness (24.9%), mood disorders (53.3%) and other diagnoses (21.9%). The CPA team consisted of physicians (saw 64% as 'keyworker'), nurses (saw 27% as keyworker), and social workers/occupational therapists (saw 9% as

	home-based assessment & treatment and assertive outreach to adult		more support for those most in need and from an economical viewpoint, less support for those that are higher functioning.	the keyworker). A non-professional support worker (MHSW) provided additional support (i.e., in addition to the keyworker) for 12% of the clients. Physicians, as keyworker, saw those clients rating the highest on GAF scores while MHSWs saw those with the lowest GAF scores (57.4 v. 47.5). The study did not define the activities of the keyworkers or the MHSWs.
9. 2004/Craig, Doherty, Jamieson-Craig, Boocock, & Attafua.	**Pilot study** to test the feasibility and impact of employing consumers as health care assistants within an ACT team. The researchers wanted to assess whether peer staff would provide a more acceptable bridge to services than standard ACT. Client needs and social functioning were assessed using the LSP scale at baseline and at 12-months. Rates of hospitalization, LOS, and social participation were also compared.	**ACTP:** RNs and non-professional peer staff **ACT:** RNs	No differences in number or length of hospitalizations, measures of self-care, turbulence or responsibility in either group. In addition, there were no significant differences in terms of satisfaction with services or specifically with the staff. Finally, there was no significant difference in the size of the social network between groups across time. ACTP participants showed significantly more engagement with treatment (higher rates of attendance at appointments and in structured social care activities), with improvements in communication and use of social contacts.	The intervention and standard ACT groups were well matched for psychopathology (BPRS average of 39.4), age, gender, social supports, ethnicity & marital status. The participants chosen were those most alienated and least engaged in an inner-city sector. All had a chronic psychotic illness and 87% had a dx of schizophrenia. Of the 45 participants, 7 cases and 7 controls in each group had been hospitalized at least once (aver. Of 67 days), ¾ of which were involuntary and ½ of these had a criminal record. The authors did not describe the health service or legal history of the remaining 17 in each group.
10. 1992/Curtis, Millman, Struening, & D'Ercole	This large **experimental pre-post evaluation** was developed to compare the outcomes of ACT and the CCM model in comparison to routine after care (where no case management services were received). Of interest are the caseload ratios: 35-40:1 for both groups. The outcomes measured were: hospital utilization and use of outpatient & ambulatory services.	**ACT** 1-2 psychiatrists, SW, 3 aides, 1-2 drivers **CCM** Health professionals (Percentages & types not given)	Interestingly, both ACT and CCM had twice as many participants hospitalized as the control group, over twice as many re-hospitalizations, and 2-2.5 times the total LOS. The authors hypothesized that having a CM resulted in clients receiving hospital care in a timelier manner.	435 participants (predominantly African Americans with low incomes) discharged from the hospital between April 1984 and September 1985 participated in the study. Of these, 143 met the inclusion criteria for CCM. 44% of the participants were diagnosed with schizophrenia and 35% with substance abuse issues. The remaining clients were randomly assigned to ACT (N=147) or routine aftercare (N=145). The ACT consisted of a psychiatrist, a social worker, the non-professional MH aides, and a physician's assistance.

				The CCM team consisted of
11. 1990/Degen, Cole, Tamayo & Dzerovych	15 month **experimental study** comparing hospital user rates pre- and post-ACT intervention.	**ACT** RNs, SWs, psychiatrists	15 months pre-intervention: 2,561 hospital days. 15 months post-intervention: 428 hospital days.	The study followed a purposive sample of 47 clients admitted to a newly formed ACT team. The participants were all diagnosed with SPMI (schizophrenia or major affective disorder) and a history of unstable illness, poor treatment compliance, frequent or prolonged hospitalizations, and poor history of treatment engagement. The treatment team showed good fidelity to the team proposed by Stein & Test.
12. 2002/Dekker, Wijdenes, Koning, Gardien, Hernades-Willenborg, & Nusselder	This 2-year **experimental outcomes study** compared 51 randomized participants in an ACT program with 28 participants in the control group (standard outpatient treatment). All participants were interviewed at baseline, 1-year and 2-year intervals using the GAF, BPRS, the Groningen Social Behaviour Questionnaire (GVSG), and the Symptom Check List-90 (SCL-90)	**ACT** a part-time psychiatrist and 8 nurses	Year 2: Both groups showed slight improvements in BPRS scores but the ACT group had worse overall scores than the control group. Both groups had a significant decrease in admissions but no interactional differences. ACT: LOS ↓66%, Costs 5%↓ than the control group. Control: LOS ↑34%	The team consisted of a part-time psychiatrist and 8 nurses (5 dedicated to rehabilitation activities). Use of a crisis team after hours to provide 24/7 coverage. The participant groups were well matched for demographic variables with the majority being diagnosed with schizophrenia, having 4-5 admissions pre-trial (4 months of admission in the last 2 years), and had co-occurring personality and addictions disorders.
13. 1993/Dietzen & Bond	This **12-month retrospective study** looked at the service characteristics, demographic and psychosocial variables, and outcomes for 155 participants in 7 ACT teams in three different urban areas in the USA. The researchers were looking at whether frequency and type of CM contact could be positively correlated to service utilization and client satisfaction.	**ACT** Staff mix not specified	The 7 programs had wide variability in the number of total contacts per client/month from a high of 21.1 to a low of 4.8. Client characteristics were not associated with changes in outcomes with the exception of gender. Women tended to be more satisfied with services received. Groups with the highest levels of service intensity (averaging **11**/month) had the lowest levels of service utilization while those with **6 or less** contacts had minimal impacts on hospital use. With the exception of hospital utilization, there were no notable associations between sociodemographic	All 155 participants met the criteria for SPMI (52% diagnosed with schizophrenia). Rather than look for differences between programs, the researchers looked at differences between clients receiving different types and amounts of service (e.g. high numbers of contacts, office-based contacts, community contacts, etc.). High Contact (overall high rates of contact; i.e., 15-20): Office Contact: (majority of contacts in the office) In-Vivo Contacts (more home & community contacts) Indirect Contacts (mostly phone calls or collateral contacts)

			variables, intensity of services and outcomes achieved.	Low Contact (low rates of all services)
14. 1998/Essock, Frisman, and Kontos	This 12-moth experimental study examined outcomes for SPMI clients randomly assigned to either CCM or an ACT team. Data was collected from 1989-1993 with assessments at baseline, 6-, 12- and 18-months. The outcomes examined were: admissions, QOL, LOS, psychopathology, and cost-effectiveness.	**ACT:** Inter-disciplinary team (psychiatrists, nurses, etc.) **CCM:** RNs & SWs	ACT clients spent ½ as many days in the hospital, expressed a higher QOL at 18 months, and spent more time living in the community (rather than being homeless, couch-surfing or incarcerated) than the CCM participants. There were no differences in: length of time to discharge from hospital, psychopathology, family burden, or total costs for care. 6 participants died during the study (no cause listed)	262 participants who were diagnosed with a SPMI (67% schizophrenia, (17% bipolar disorder, 12% major depression, 4% other Axis I disorders and were: heavy users of acute services, dysfunctional in the community, had a history of frequent & lengthy hospitalizations and of being homeless at some time in the last year. Participants were randomly assigned to either ACT or CCM. The authors clearly identified the mandate of each team and ensured both groups showed good fidelity to the original models.
15. 2006/Essock, Mueser, Drake, Covell, McHugo, Frisman, et al.	This 3-year **longitudinal outcomes research study** compared ACT and CCM in the models' ability to deliver integrated treatment for co-occurring disorders. 198 participants were randomly assigned to either CCM or ACT teams that were trained to provide addictions counseling.	**ACT:** Inter-disciplinary team **CCM:** RNS & SWs	Participants in both programs improved in multiple outcomes domains (decreased alcohol and drug use, improvement in psychiatric symptoms and general life satisfaction) though there were no statistical differences between GAF scores at baseline and three years. There was a significant drop in drug and alcohol use (1/3 of the participants were in remission at 3 years) equally across both teams leading the researchers to state that integrated treatment could be successfully delivered by ACT or CCM.	Participants were diagnosed with a psychotic disorder (schizophrenia, schizoaffective disorder, bipolar disorder, or depression with psychotic features) and a substance abuse issue. The traditional ACT team with a client ratio of 10:1 was compared to a very conservative CCM caseload ratio of 25:1. Historically, CCM ratios tend to range from 35-50:1 though numbers as high as 100:1 have also been seen. Given these numbers, the advantages of having a smaller caseload (i.e., more contact, enhanced community outreach, enhance rapport) would be minimized in the ACT team.

16. 1997/Goering, Wasylenki, Lindsay, Lemire, & Rhodes	This **18-month longitudinal evaluative study** involved all clients admitted to the Hostel Outreach Program (HOP), an assertive outreach program, providing ACT for homeless mentally ill clients. The authors conducted baseline assessments for the nine months preceding the intervention and re-assessed at 9 and 18 months. Use of a personal history form, functional scales (SLOF), and BPRS. Scales measuring adequacy of housing, service use, and the working alliance	ACT Not Specified	The most significant improvements in housing, symptom reduction and social functioning occurred at 9 months with more modest improvements seen at 18 months. The participants spent less time in shelters, more time in permanent residences, had markedly less suspicion, hostility, anxiety and depression and showed marked improvement in personal care, work, relationships and social acceptability. The authors found positive correlations between the working alliance (WAI) and social functioning (SLOF)	All clients (55) admitted to the HOP program of which 55 were able to complete the project. Participant characteristics: high-risk, homeless, severe disability, psychotic symptoms (86% diagnosed with schizophrenia), substance abuse, and long-term behavioural problems. Of note, the average number of years spent homeless was 9.3. Case managers initially trained in rehabilitation-orientated interventions but staff activities evolved to match the need to first establish relationships and stabilize high-risk environments before attempting to rehabilitate and teach the participants. Adequate inter-rater reliability was established.
17. 2005/Gregory & Hovey	The researchers developed a 6-month **pilot project** to evaluate the impact of extending the hours of the ACT team from 9am-5pm to 8am-8pm. The contacts were audited for focus of contact (to enhance engagement, supervise medication, etc.), type of contact (direct/in-direct, face to face or telephone), length of contact (10 minutes to 5 ½ hours), nature of contact (routine or crisis), and intensity of intervention (I or more staff required).	**ACT** 4 RNs and 3 SWs	The authors found that activities carried out during the weekend and extended evening hours tended to involve routine clinical support (i.e., tasks) rather than therapeutic interventions (client & family teaching, cognitive/dialectical behavioural therapy, etc.). The staff received relatively few crisis calls and of those received, few required more than a few minutes of brief advise to resolve the issue. There was no decrease in the number of total admissions of ACT clients from previous years during the pilot project. The authors felt that the supportive benefits gained by having this resource could be provided by a less costly 24-hour crisis telephone service.	59 Participants were diagnosed with schizophrenia (65%), schizoaffective disorder (15%), and bipolar disorder (13%). Although the ACT team provided extended evening and weekend services, only two staff (one nurse and one non-nurse) was on at any given time and were often expected to work independently of each other (raising safety and other issues). The authors did not compare their pilot data with that from already established extended care ACT teams in their area

18. 2003/Habilibis, Hazelton, Schneider, Davidson & Bowling	A **prepost, longitudinal evaluative study** examining the relationship between involvements in assertive outreach and standard community nursing care to measure improvement in psychosocial outcomes. The authors used the BPRS, GAF, the Rosenberg Self-Esteem Scale and the Life Skills Profile to assess relationships pre- and post-intervention. The CCM team examined had caseloads of 20:1, double the number recommended for ACT members. Clients were tested at admission, 1-month, 6-month and 12-months.	**ACT** 5 RNs, 2 allied health professionals, psychiatrist **CCM** 2 RNs	At the end of the program, the majority of ACT clients (52%) indicated that they would prefer not to receive MH services at their home and would prefer hospital treatment rather than community care (64%). Not surprisingly, differences in hospital admissions and LOS were not statistically different from baseline. Clients reported fewer medication side effects and decreased reliance on after-hour services. The ACT group had a higher incidence of compulsory orders that the authors ascribed to the effective crisis management role in this model. The authors recommended enhanced hospital treatment in the absence of an evidence-based model of community care.	Two matched (though not randomized) groups of 37 clients each. Diagnosed with SPMI but not detailed. One group received the services of a case manager with a 20:1 caseload, a max. 20-minute driving radius and extended hours of service. The second group received the services of one of two community nurses who covered all clients outside the 20-minute driving limit (this was the normal practice prior to the development of the new team.
2000/Havassy, Shopshire & Quigley **(Not used)**	This **experimental RCT** was designed to evaluate the effectiveness of CCM and BCM in caring for SPMI clients and SPMI clients with co-occurring substance-dependence. CCM provided time-unlimited services while BCM was expected to taper off after 60 days.	**CCM** **BCM**	The researchers failed to publish specifics of the two models such as professional affiliations and caseload ratios between the two teams.	38% of eligible participants refused to be involved in the study. 268 adults were randomly assigned to either CCM or BCM. Both groups were well matched for sociodemographic variables and diagnoses.

19. 2002/Harvey, Burns, Fiander, Huxley, Manley & Fahy	This **RCT multi-site impact analysis** to determine if relatives of clients on ACT received greater contact, felt less negative towards caregiving or experienced less psychological distress than the relatives of those receiving CCM. The participants were relatives of patients who were recruited for the UK700 trial.	**ACT** **CCM** RNs, SWs, OTs, psychologists, & psychiatrists	The authors found that relatives of clients receiving ACT received increased contact with CM (70% v. 45%). However, there was no data supporting decreased psychological distress or negatively experiencing caregiving in either group (i.e., the CM relationship did not appear to be correlated with decreased caregiver burden). The CMs in both groups did not receive any specific training in providing psychosocial support and education to families. The UK government has recommended that MH carers have their particular needs assessed and receive their own care plan to be implemented in discussion with them.	The two groups of participants (ACT-N=77, CCM-N=69)-were randomly selected from the pool of clients engaged in the UK700 project. All were adults, aged 18-65, had a diagnosis of psychosis, and two recent hospitalizations. Those with a history of substance abuse or organic brain injury were excluded. The CMs were asked to record their contacts with "carers" that included friends, neighbours, and relatives, whereas on the relatives were interviewed. Given the high degree of family burnout associated with this population, these carers may not have provided the most accurate data. There was also no measurement of psychiatric illness in the relatives who were interviewed. Again, given the proven incidence of increased mental illness in families of MH clients, such a measure should have been obtained.
1997/Hemming & Yellowlees **(Not Used)**	**Evaluative study** looking at CM adherence to CCM activities of engagement, assessment and planning, community & family support linkages, psychotherapy and life skills training, and crisis intervention & monitoring.	**CCM**	The study clearly defined CCM roles and program adherence to those roles but did not expand their research to include outcomes evidence. **Therefore, this research will not be used.**	This cross-sectional study involved 25 clients randomly selected from the caseloads of 6 case managers.

20. 1993/Hornstra, Bruce-Wolfe, Sagduhu, & Riffle	This 24-month **evaluation** of ACT compared the experimental group to control groups of CCM attempting to provide the same services with caseloads 3-10 times larger (i.e., 100:1). The researchers collected information from health records and the clients' charts on the amount and type of services received during the study period. Rates of service received were compared to rates of hospital utilization.	**ACT** Staff mix not discussed	Type of model not shown to affect hospitalization use. Though ACT participants had less clients hospitalized for fewer days, the differences were not considered statistically significant	112 purposively sampled ACT clients were compared to 112 clients (Total N=224) receiving CCM all of whom were matched for diagnoses (all with schizophrenia) and other demographic variables.
21. 1995/Jerrell	This 18 month experimental outcome research compared the outcomes achieved in three randomized groups of case managed clients.	**ACT** 3 nurses, 2 inter-disciplinary staff, one psychiatrist, & one supervisor **CCM** 4 SWs and one Psychiatrist **BCM** Paraprofessional staff	**Costs:** ↓BCM, =CCM and ↓ACT by the end of the study. Costs did not differ significantly between groups. **Psychosocial functioning**: ACT=CCM=BCM **Improvement in psychiatric symptoms**: ↑CCM, ↓BCM/ACT	122 participants aged 18-59 diagnosed with SPMI (psychotic or major affective disorder), with a history of unstable illness, frequent hospital use, poor community functioning, on disability pension, and poor relationship skills, randomly assigned to one of the three CM models. The authors used baseline acuity variables in recognition of various subgroups of SPMI that respond differently to treatment. Given the cost-effectiveness of all three teams, the authors argue that providing ACT with higher caseloads may offset costs while maintaining positive health outcomes.

22. 1998/Johnson, Salkeld, Sanderson, Issakidis, Teeson & Buhrich.	A 12-month **RCT to evaluate** the efficacy and cost effectiveness of ACT versus CCM models with clients diagnosed with SPMI. Efficacy was determined by evidence of a significant improvement in the Life Skills Profile (LSP). As CCM had been in operation for many years, the ACT teams were considered the experimental treatment. Costs of providing a more intense service were compared with differences in treatment efficacy across the two groups.	**ACT: 33 clients** **CCM: 25 clients** Both teams were comprised of interdisciplinary professionals. Type and percentages were not discussed.	The costs for each group included all in-patient costs, mental health care, medical care, community services and informal care over the twelve months. As a group, the ACT clients did not show significant increases in mean LSP scores though over half did significantly better compared to 24% of the CCM group showing improvement. The authors question whether the $6,694	Both teams were interdisciplinary and provided for supervision of medication, counseling and assistance with social needs- the chief difference was in staff to client ratios. 58 of 73 Clients were randomly selected from those diagnosed with a psychotic disorder only. Both groups were well matched for diagnosis, gender, marital status, and age and employment status. Clients with co-occurring substance abuse, intellectual disability or organic brain disorder were excluded. Inter-rater reliability for the LSP interviews was found to be adequate. 18 points was considered a clinically significant increase in the LSP score.
23. 1998/King	This 12-month **pre-post evaluative study** compared outcomes between 56 clients with SPMI purposively sampled to either BCM or ACT. The author of the study hypothesized that the ACT participants would show enhanced functioning and decreased hospitalization and in comparison to those receiving BCM. Level of functioning was determined by use of the GAF scale.	**ACT** a psychiatrist, 3 social workers and one advanced practice nurse. **BCM** 3 graduate level social workers and a psychiatrist An advanced practice nurse was available for consultation and treatments.	Despite lower GAF scores and higher hospital utilization rates at baseline, the ACT participants had significant improvements in GAF and reductions in hospital admissions and LOS during the course of the study. However, there was no statistical difference in GAF score outcomes between the two groups. There was a significant drop in hospital admissions between baseline and at 12-months in ACT and a statistically significant improvement over BCM admissions. However, LOS between the two groups was not found to be statistically significant.	The 56 participants were taken from a larger group of clients (diagnosed with psychotic or affective disorders) given the choice of either ACT or BCM. State laws prohibited assigning persons to treatment groups without their consent. Participants in the ACT team scored significantly lower on the GAF scale, had more hospitalizations, and a longer LOS than those in the BCM group at baseline. There were 28 participants randomly chosen from those that entered each of the two programs and remained for at least 12 months.
24. 1993/Lehman, Herron, Schwartz & Myers	The authors employed a 1-year randomized clinical trial add-on design to compare ACT, as an add-on, to the services provided by CCM in a Psychosocial Rehabilitation Centre.	**ACT** **CCM** Staff characteristics not discussed	There were no significant differences between the two groups in terms of treatment impact (substance use). There were also no significant advantages, in terms of engagement, between the two groups.	54 participants were randomly assigned to the ACT (N=29) or control group (N=25). Both groups were well matched for age, diagnosis (70% with schizophrenia), gender, and ethnicity. All participants met the criteria for substance dependence.

25. 1994/Macias, C., Kinney, R., Farley, W., Jackson, R. & Vos, B. (1994	This was a 2-stage research study carried out in a rural area of Utah, USA. The primary study was a 12-month **posttest-only experimental evaluation** of SBCM client outcomes in a psychosocial rehabilitation program (PRP) compared to those receiving PRP alone. The participants and family members were interviewed and scores obtained using three scales designed by the primary researcher (Macias): the Brief Psychological Well-Being Index, the Self Report Inventory, and the Family Interview Schedule. Staff in each area carried out regular psychosocial assessments. The second stage of the study was a before-after experimental evaluation of the frequency of hospitalization and crisis centre contacts 18 months pre and post intervention.	**SBCM** (2) ½ time baccalaureate health professionals* and one non-professional worker **PRP** (control) 1 masters level & one baccalaureate level health professional* plus 2 non-professional workers * Professional affiliations not described.	The SBCM participants reported fewer problems with mood & thinking, better overall physical & mental health, and greater competence in daily living. The data from family members corroborated an improvement in psychiatric symptoms and functional levels and feeling less burdened by the participants needs. The staff assessments reported less depression & difficulty with thinking but found no significant differences in regards to social behaviour, self-care, social functioning or physical health. The two groups did not differ with respect to amount of social support. Group participants were equally satisfied with the mental health centre and therapy received.	This study had a very small rural sample, randomly assigned to each group (SBCM N=20; PRP N=21). By the end of the study, 10% of the SBCM and 24% of the PRP participants were lost to attrition. Both groups were well matched in terms of demographic and diagnostic variables with only 80% taking psychotropic medication majority of participants diagnosed with schizophrenia (46%) or major depression (22%) and a relatively modest mean GAF score under 50. The PRP program provided programs for approximately 22 clients throughout the year (1director, 2 full-time staff, 1 ½ -time staff and 1 ½-time consumer aide).
26. 2006/Macias, Rodican, Hargreaves, Jones, Barriera, & Wang	This **2-year experimental RCT** was designed to compare ACT to Clubhouse models in employment outcomes for clients with SPMI. The authors referenced previous research establishing supported employment as evidence-based practice but wanted to see if the above models met the performance benchmarks set for specialized supported employment teams. The researchers hypothesized that: • ACT would have higher service engagement & retention rates resulting in higher job placement rates, and • That clients associated with Clubhouse would earn higher wages and remain employed longer than ACT participants.	**ACT** RNs, case managers, psychologists, addiction & vocational specialists **Clubhouse Models** Staff characteristics were not discussed	ACT and Clubhouse groups compared favourably with five benchmark studies with hours of work and wages earned statistically similar. The Clubhouse multi-service model was found to be a cost-effective alternative to more expensive and specialized vocational services and the ACT model was found to be superior in providing vocational education and support to clients who needed more intensive clinical care. The ACT program was the most effective at keeping clients engaged in program services and the Clubhouse was most effective in keeping participants employed (for longer periods, with greater hours worked and earning more). The authors cautioned that generalizability is limited to those	174 participants. Both groups (ACT, N=85, Clubhouse, N=89) were well matched for diagnosis (60 & 43% respectively), age, gender, previous employment, substance use (41 & 33% respectively) and physical health problems. ACT and Clubhouse clients had access to rehab services, case management, supported education, etc. and staff in both programs received training to ensure fidelity to their specific models and consistent record keeping. Vocational staff worked on both teams to educate staff and enhance rapid placement in mainstream jobs. The performance benchmarks were derived from five earlier studies that examined total hours of work and total earnings. ACT and Clubhouse were evaluated based on these figures.

			ACT and Clubhouse services showing high fidelity to the original models.	The authors noted that data collection took place between 1996 and 2000 in 3 different states where minimum wage rose between 21-44% (depending on the state). Clients who never worked or work during the entire study were considered outliers and excluded from the data sample.
27. 1990/McRae, Higgins, Lycan, & Sherman	This **modified time-series A-B design study** spanned 5 years of ACT, 2 years pre-treatment and 2 years post-ACT (receiving CCM)	**ACT** **CCM** Staff characteristics not discussed	91% of the clients remained engaged in services (9% refused follow up). There was no significant changes in hospital usage however, contacts with other MH services at the centre increased 63% and MHCM contacts decreased 97% (i.e., 4.7 contacts /year compared to 130.7/year). Case management costs showed a major decrease but was offset by higher rates of use in other programs and inpatient care. The total cost savings was $1200/client per year in each of the 2 years following cessation of ACT. The authors concluded that 5 years of ACT was successful at breaking the "Rehospitalization cycle" and could be successfully transitioned to less costly services without adverse consequences.	72 participants (purposively selected) who received 5 years of ACT (1980-1985) were assessed 2 years prior to receiving ACT and 2 years after transferring to standard CCM (with a much higher caseload ratio). Diagnoses: 84% schizophrenia and 16% schizoaffective disorder. Most clients received after-care from the same staff member (ACT staff were transferred to CCM services) when the ACT program was shut down though with fewer contacts due to higher client numbers. Not surprisingly, clients with a higher GAF, older age, and were better engaged with services functioned better than the rest of their cohort in the post-ACT phase.
28. 2004/Meaden, Nithsdale, Rose, Smith, & Jones	The researchers of this 12-month **naturalistic correlational research** sought to identify whether levels of engagement on an ACT team were positively correlated with hospital use (admissions and LOS). An 11-item scale developed by the primary authors in this study measured levels of engagement (quality of relationship, attending appointments, following prescribed treatment and perceived usefulness of treatment). Pre-ACT admissions and bed usage was taken from chart notes with total scores divided by the number of years since the	**ACT** Staff characteristics not discussed	The authors in this study found that clients receiving ACT had a lower incidence of admissions and mean bed days but a higher incidence of prolonged admissions (explained as difficulty finding appropriate housing). Clients who found their treatment "useful" and reported good client-therapist interactions were correlated negatively with number of admissions and LOS. "Compliance with medication" and "appointment keeping" did not correlate with hospital admissions or LOS.	This participants in this purposive sample (N=45) were predominantly diagnosed with psychotic illnesses (80%), had a 24% incidence of substance misuse, had been in the ACT team for at least 3 years (64%), were well engaged with services (75%), and had equal numbers of employed and not employed. The author defines "engagement" as a term that describes adherence to treatment and a process that can be influenced by current functioning levels and past experiences with psychiatric and legal authorities.

	first psychiatric admission. This number was compared to data obtained in the first year of ACT.			
29. 1997/Meisler, Blankertz, Santos, & McKay	This **retrospective and naturalistic case study** was carried out over the four-year period that the ACT team was in operation. Subjects were assessed at baseline, and at 1-year intervals during the study.	**ACT** ½ psychiatrist, MSW, 2RNs, 7 masters & baccalaureate level counselors (SW, vocational, addictions, etc.)	The participants showed significant improvements in housing, decreased hospitalizations, employment and incarcerations. The authors did not address any clinical outcomes (i.e., measures of psychosocial functioning or symptom severity) in this study.	The participants were diagnosed with schizophrenia, schizoaffective disorder, major affective disorders (with and without psychosis), and borderline personality disorder. 59% met the criteria for substance misuse. 114 homeless purposively sampled participants about to be discharged from the hospital or prison. The mean age was 39, there were equal numbers of men & women, The ACT team was composed of a ½ time psychiatrist, an MSW team leader, 2 nurses, and 7-masters and bachelors-level staff (counselors, SW, substance abuse experts, etc.).

30. 2002/Minghella, Gauntlett, & Ford	**12 month experimental outcomes research** to evaluate the effects of model fidelity on participant outcomes of engagement, clinical and social benefits, and service use and cost and user satisfaction. The ACTG group had 6 "generic" CM positions though two of these staff had clinical qualifications. The ACTP group consisted of a social worker, 2 nurses, a PT psychologist, and a housing liaison worker (who was also the team leader). Neither team had the benefit of a psychiatrist, or extended hours (past Mon-Fri, 9-5) of operation. The researchers used the HoNOS, the BPRS, the LSP, QOL scales and the Client Satisfaction Questionnaire (CSQ) to assess the participants at baseline and 12-months.	**ACTG:** 6 generic workers (2 with "clinical qualifications") **ACTP:** SW, 2 RNs, PT psychologist, housing liaison worker.	Fidelity: Both teams used a team approach, had small caseloads, unlimited admissions, and assertive outreach & engagement. The ACTG staff showed 53% fidelity and the ACTP staff showed 65% fidelity with the DACT scale of fidelity. Client Characteristics: ACTG: improvements in 4 of 5 social domains and 3 of 4 HoNOS domains. There were no significant changes in BPRS or QOL scores. ACTP: participants had significant improvements in dealing with social problems, taking responsibility and in their living situation however no other changes were found in any of the other subscales. Neither team showed changes in the objective measures of QOL Service Use: Both teams had similar rates of change in engagement at 12-months. LOS for ACTG and ACTP participants more than doubled (115 v. 112% respectively) at 12-months post-treatment though the number of admission was unchanged. The ACTG group showed an overall increase in contact with nurses and psychiatrists. The ACTP group showed a marked decrease in contact with the team social worker at 12 months. Both teams showed an almost 3 fold increase in total costs associated with care 12 months after admission. Client Satisfaction: 80-96 % of ACTG clients were satisfied with the service compared to 65-88% of the ACTP group.	The participant sample (79) was purposive for both groups and reflected the total admissions to each service during the 12 months of the study: ACTG (N=42) and ACTP (N=37). With the exception of a history of violence (ACTG 2%, ACTP 30%), and diagnosis (76% schizophrenia in the ACTP group as opposed to 48% in the ACTG group) the groups were well matched.

31. 2002/Nieves, E.	**Quasi-Experimental** research conducting matched-group comparisons of hospital re-admissions, quality of life (QOL), housing, and vocational rehabilitation in clients receiving ACT or day-treatment services. Sample eligibility included a diagnosis of chronic mental illness, at least one previous psychiatric hospitalization, a history of non-compliance and housing/vocational instability.	**ACT** Staff with BA or higher degree, nursing, psychiatrist (no percentages given) **Day Treatment Services** Staff with BA or higher degree, nursing, psychiatrist, vocational rehab (no percentages given)	There were no fewer hospital rates in either group. Personal goals attainment related to medication management, health care, relationships and household management were correlated more strongly in the ACT model. Greater housing stability was not supported in the ACT model. And employment rates were consistently low for both models.	Sample size relatively small (60 total) and purposive. Experimental and control group well matched for age, education and gender though there were significant differences in gender and marital composition (more clients Caucasian and with marriage history in the ACT group). In addition, clients selected for ACT were more likely to be living in non-supportive housing than clients in the day-program group. Inter-rater reliability assessed and modified. Participants in the experimental and control groups were diagnosed respectively with schizophrenia (90/85%), bipolar disorder (7/7%), and other major mental illnesses (3/7%).
32. 2000/Preston	Three years **Experimental study** applying equivalent community-based ACT to 42 participants with schizophrenia and 49 participants with early psychosis (EP) The authors sought correlations between community survival and stage of illness/functional level when equivalent interventions were used. Looked at efficacy of ACT in treating EP v. chronic schizophrenic clients. The authors used Social and Occupational Functional scores (SOFAS), Life Skills Profile scores (LSP), and Role Functioning scores (RFS) to measure participant functioning levels. A Cox regression analysis was used to look for correlations between functional levels and community survival and a Kaplan-Meier survival analysis was used to compare survival between the two groups.	**ACT** ½ psychiatrist, 2 SW, 2 RNs **EP** ½ psychiatrist, psychologist, SW, 2 RNs	Cox regression analysis indicated increased community survival for clients as scores in living skills and non-turbulence (measuring violence to self or others, etc.) increased. EP relapses at 25 months compared with 11 months for schizophrenia clients. The differences in treatment outcomes, with the exception of relapse rates, were related to client characteristics rather than stage of illness; e.g., increased scores in measured life skills improved community survival and clients with high non-turbulence scores remained in the community twice as long (18.3 months) as those with low scores.	All 91 participants were diagnosed with a psychotic disorder (early psychosis or schizophrenia). Those diagnosed with schizophrenia, on average, were 6 years older, had been ill 10 ½ years longer, and scored significantly lower in all measures of social, occupational, and role functions as well as in life skills.
33. 2000/Preston & Fazio	**Matched control group** (80 per group-purposively sampled) study to examine the efficacy and cost effectiveness of using an ACT program. Efficacy was equated with	**ACT** **CCM** Staff characteristics	As predicted, the pretreatment rates of hospitalization and weekly outpatient contacts were statistically similar for both groups (though total outpatient	160 participants. Though the title indicated that ICM would be examined, the body of the paper addresses the study within an ACT model.

	decreased LOS. Participants were diagnosed with a chronic mental illness (at least five years since diagnosis), had at least two hospital stays with a stay of over 30 days in the past year, and receiving care on an ACT team for the last year.	not discussed	contacts was greater in the CCM group). Also as predicted, the admission rates and LOS for the ACT group were 63 and 48% lower for, respectively, one and two years post-treatment and levels of service utilization increased. There were no significant differences in LOS or service utilization rates for the CCM group. Both CCM and ACT treatment resulted in costs savings for the health authority. Although total MH costs (inpatient & outpatient) for ACT and CCM were similar at one year pre-treatment, ACT was $396,111 cheaper than CCM at one year and $801,475 cheaper than CCM at two years post-treatment.	The ACT and CCM groups were well matched for gender, age, points of MH contact, diagnosis (schizophrenia 57%, affective disorders 22%, substance abuse 6%, personality disorders & anxiety 3% each, and 9% with non-specific diagnoses), race (predominantly Caucasian), and level of education, with over 73% having a secondary or better education. ACT teams averaged 3-4 contacts per week whereas the CCM staff averaged one contact per week. 15 clients dropped out of the ACT group so a like number was dropped from the CCM group.
34. 2003/Priebe, et al	**Program evaluation** utilizing random sampling of established clients (those in ACT for at least 3 months) and purposive sampling of treatment naïve 'new' clients (those newly arrived or in ACT less than 3 months) from 24 ACT teams operating in London, UK. The sample size was 391 established and 189 new patients. The authors sought to identify the relationship between patient characteristics and outcomes from involvement in three groups of ACT teams with slightly different levels of professional involvement and intensity of contact. **3 Staff Mixes:** 1 & 2) Integrated interdisciplinary teams and access to dedicated psych beds. 2) Lower case loads and higher degree of psychiatrist involvement. 3) No access to dedicated beds, no psychiatrist input, & higher degree of contact	**ACT:** 56% RNs, 24% OTs, 12% MH workers, 8% other professionals	Drop out rate of 14% of the sample 580 clients with a total of 494 remaining. Newly accepted patients were more often hospitalized and compulsorily admitted. Discharge rates between new and established were statistically similar (15.2 v. 13.1%). Though all three staff mix groups showed significant decreases in compulsory admissions, hospitalizations and LOS, those clients in the non-professional group showed the most significant decreases (perhaps reflecting a more 'established' case load and more numerous community contacts).	The participant (N=498) diagnoses were: schizophrenia 73%, bipolar disorder 11%, and other diagnoses 16%.. The authors of the report used a unique sampling technique to ensure that observed outcomes were not influenced by long-term, more stabile, ACT clients on teams with low current admission rates. Both groups were well matched for age, gender, ethnicity, marital status, and support (level of education was not measured). The 'new' group showed significantly higher rates of hospitalization (81.7 v. 68.3%), involuntary admissions (66.5 v. 50.5%), drug and alcohol misuse (26.4/21.3 v. 16.9/14.1%), and violence (44.3 v. 30.5%).

2002/Prince, P. & Prince, C. **(Not used)**	**Evaluative-Survey Research**. The role of perceived stigma in discouraging community integration. Interviews of 2-2 ½ hours with trained researchers (4 ½ day standardized training sessions). Participants averaged 43 years of age and had been served by ACT for an average of approximately 4 years.	**ACT**	The researchers found an inverse relationship between perceived stigma and community integration. **Since this study did not look for ACT effects on perceptions of stigma, it will not be used in this outcomes study.**	Purposive sample of 99 of 385 clients asked. Participants were compared with non-participants with no significant differences found in clinical or demographic variables. Participatory research approach where clients were part of the advisory board and were also trained interviewers. Perceptions of stigma measured using the Devaluation-Discrimination scale on a Likert-like scale. ACT fidelity was measured using the Index of Fidelity for ACT (IFACT-McGrew, Bond, Dietzen & Salyers, 1994).
35. 1997/Ryan, Sherman & Bogart	This **12-month retrospective program evaluation** compares client outcomes pre and post intervention to determine the effects of specific SBCM actions on participant outcomes. Participants were divided into two groups at the end of the study: long-term (i.e., less cost-effective and shirt-term (more cost-effective). Data collection occurred between 1986-1989.	**SBCM** Staff characteristics were not discussed	The authors found that clients receiving housing and financial support & training and social rehabilitation early in the relationship tended to be short-term clients and required less service as the first year of service progressed. Clients who received rehabilitative services later in the relationship tended to have worse outcomes.	712 (382 kept with the study) clients admitted to program, most diagnosed with schizophrenia or other psychotic illness (actual numbers not available) and had experienced numerous psychiatric hospitalizations.
36. 2006/Schonebaum, Boyd, & Dudek	**This 30-month randomized longitudinal study** sought to determine whether the Clubhouse model (experimental model) of care has comparable employment placement rates as those in ACT (control model).	**ACT** RNs, case managers, psychologists, addiction & vocational specialists **Clubhouse Models** Staff characteristics were not discussed 37	No significant differences in job placement rates or weekly employment rates between the two models. Both models matched or bettered benchmark rates set by individual placement & support models. The average participant in both studies worked more than one job during the study . . . there was no significant difference in total jobs worked. However, Clubhouse participations worked significantly more weeks per job and earned significantly more (17% higher) than ACT participants.	Of 465 applicants, 27% declined to participate in a portion of the program, and of the remaining participants, only 52% met the eligibility requirements. The final sample of participants had either a psychotic or affective disorder with a majority exhibiting delusions (66%) or hallucinations (77%) as measured on the PANSS. **170** participants were randomly assigned to either the Clubhouse (N=86) of to ACT (N=84). Both groups were well matched in gender, age, psychopathology and vocational history. Fidelity to the Clubhouse model was determined through the International Center for Clubhouse Development (ICCD)

				certification process. Competitive employment is defined as that which provides for minimum wage in an integrated setting.
37. 2006/Sells, Davidson, Jewell, Falzer, & Rowe**.**	**This 12-month prospective longitudinal study** explored the effect of peer providers on client feelings of engagement and utilization of health services. 137 participants were randomly assigned to either a standard CCM or a peer CCM	**CCM** Staff composition not discussed	The participants that were given care by peer providers expressed more positive provider relationship qualities and demonstrated a greater willingness to attend provider appointments and drug and alcohol group programs. In addition, the clients in the peer group had 4.2 times as many contacts in the 6th month as did the professional group. In fact, the clients in the peer group steadily increased the number of contacts and the clients of professional CCMs decreased contact by 66% by the end of 6 months.	137 participants. The two groups were well matched for diagnosis of mental illness and substance use disorder. Psychotic dis. 61-62%, affective dis.59-67%, substance use dis. 71-72%. The peer CCMs had caseloads that were half the size of professional CCMs, enhancing their ability to provide more contact.
1995a/Solomon & Drain **(Not used)**	This 1-year **evaluative outcomes trial** compared psychosocial and clinical outcomes with 118 inmates randomly assigned to ACT, CCM or "standard" treatment at a community mental health centre.	**ACT** **CCM**	The description of the ACT teams did not support good fidelity to the model in that, there was no team supervisor (the psychiatrist assumed that role), the plan was to transfer the ACT participants to standard care after one year (rather than providing time-unlimited care), and high turn over of specialized staff. **Could not use due to lack of fidelity to the models under study.**	Only 118 participants were eligible out of 200 clients initially screened. Prison officials did not release participants who met the criteria of SPMI and homelessness in a manner that would have supported a full cohort in a timely fashion to the community. Some persons were transferred directly to state hospitals rather than to the community (potential for ↑degree of SPMI to be excluded from this study).
38. 1995b/Solomon & Draine	This was a **12-month pre-post-test experimental design** comparing outcomes between ACT teams that have client-providers and those that don't. Each team was composed of 4 CMs. Clinical and social outcomes as well as participant satisfaction and contact with families were measured.	**ACT(C) client providers** **ACT (control)** Staff composition not discussed	There were no significant differences between ACT(C) and ACT alone in terms of social or clinical outcomes. However, clients in the ACT(C) group were less satisfied with CM services and had significantly less contact with families by the end of the study (the authors felt this might be due to client-provider bias by the clients and there families).	91 clients with SPMI (87-78% schizophrenia, 9-16% affective disorders for ACTC and ACT respectively) were interviewed at baseline and after 12 months of service and randomly assigned to either the experimental or control group. The ACT(C) team was composed mainly of client-providers and operated as part of a consumer run advocacy and service organization. The ACT team operated from a community MH centre in the same

				catchment area as the ACT(C) team. Both groups were well matched for gender, income level, and housing stability. The ACT group were significantly younger, had significantly more arrests in the last year, were more likely to be living in boarding homes or with parents and to have never been married. The study was carried out on clients who were an older, more stable population than would be found in a post-hospitalized or crisis driven service.
39. 2007/ Sytema, S., Wunderink, L., Bloemers, W., Roorda, L., & Wiersma, D.	To determine if ACT can help prevent "loss to follow-up". To evaluate the effect of using ACT on measures of homelessness and psychiatric hospital admission days. **Evaluative** research-RCT. Clients diagnosed with SPMI (49 in the experimental and 49 in the control group).	**ACT** (4.1 on DACT scale) Psychiatrist, psychologist, SW, RN, addictions specialist, and a non-professional worker **CCM** Psychiatrist, psychologist, SW, RN	The researchers found that ACT was significantly superior to CCM in maintaining contact with clients, and slightly decreasing homelessness; ACT:0% CCM: approx. 25%. The study showed no significant differences in hospital admissions, drug or alcohol abuse, or symptom severity.	118 randomly selected participants with SPMI chosen to determine the effect of ACT on level of psychotic symptoms, homelessness and hospitalization. Use of the DACT scale to measure ACT fidelity. Staff trained to use the model and carry out assessments of client functioning. Patients were rated using the Health of the Nation Outcome Scores (HoNOS) and only those with a score of 15 or higher were chosen. The researchers felt that CCM has evolved over the last decade to include many aspects of ACT (e.g., assertive outreach) resulting in less significant differences in outcomes.
40. 1999/Tibbo, Chue, & Wright	This was a **2-year pre-post outcomes study of** 295 participants receiving ACT. The authors compared hospital utilization data 1 year pre-Act to 1 year post-ACT. Hospital outcomes included: # of admissions, LOS, and ER visits. Data was collected, with participants' permission, from the Alberta Health central database.	**ACT** 17 psychiatrists, 24.2 RNs	<u>1-year Post-ACT</u> **Admissions:** Reduction of 34% (↓128 fewer admissions) **Length of Stay (LOS)**: Reduction of 56% (↓11,836 bed days) **ER Visits**: Reduction of 32% (↓253 visits)	Purposive sampling of 118 was ongoing as clients entered the program between 1992-1996. The ACT team consisted entirely of 24.2 FTE nurse positions supported by 17 part-time psychiatrists and demonstrated adequate fidelity with Stein & Test's original model. Participants were included if they were between 18-65 years of age, diagnosed with a SPMI (psychosis 47.5%, major affective disorders 33.6%, & dysthymia/personality disorders 7.5%), and had a pattern of multiple admissions to a psychiatric unit, poor community functioning, a history of

				non-compliance, at high risk for re-admission or unwilling to be followed by an office-based service.
41. 2001/ Tibbo, Joffe, Chue, Metelitsa & Wright	**Longitudinal program evaluation** measuring changes in the Global Assessment of Functioning (GAF) on 411 clients between baseline scores and at 18 and 36 months post-treatment between 1994 and 1999).	**ACT** 17 psychiatrists, 24.2 RNs	The researchers looked at the GAF scores of clients grouped by diagnosis and by score (i.e., GAF ↓40 or ↑40). There was significant improvement in GAF scores in all client groups except those with a primary diagnosis of Major Depressive Disorder (MDD-no change over 3 years). Significant improvement was seen in clients with GAF scores ↑40 and no statistical improvement in those with GAF scores ↓40. The authors found that those with schizophrenia tended to have the lowest GAF scores and those with MDD had the highest GAF scores, at baseline.	The participant diagnoses were: psychotic illness 60%, major affective disorders 35%, and 5% other disorders. The ACT team has a skill mix of 19 psychiatris0ts (part-time), 24.8 FTE community nurses and 2.5 FTE community support workers. Provides 24-hour assertive outreach, advocacy, monitoring, continuity between services and individualized services. Unlike other studies that measure systems outcomes, this study focused on evaluating the client's level of functioning in the community. Population demographics included equal numbers of males and females.
42. 2005/Udechuku, et al.	**A retrospective case audit to evaluate** the effectiveness of the team in reducing readmissions to psychiatric inpatient services. The researcher conducted a retrospective chart audit and consulted with individual case managers to obtain demographic data. The outcomes examined hospital admissions and LOS.	**ACT** 6 RNs, 1 OT, ½ psychiatrist	The research data supported the hypotheses that clients receiving ACT in her area showed a significant reduction in psychiatric admissions (42%) and LOS (reduction of 85%) for a cost savings to the health authority of approximately $13838 per annum per client.	The study involved a team composed of o 6 N/CM, 1 OT/CM (occupational therapist), and a ½ time psychiatrist to provide service to 50 clients with SPMI. (43 were included in the study) The clients were predominantly male (56%), single (68%), diagnosed with a psychotic dis. (schizophrenia 79%; schizoaffective dis. 19%; bipolar disorder 2%), with medical co-morbidities (77%), and a low mean GAF of 46 (range 25-82).
43. 2000/UK700 Group	**RCT program evaluation** to study the cost-effectiveness of intensive v. standard CM for severe psychotic illness.	**ACT:** 56% RNs, 24% OTs, 12% MH workers, 8% other professionals **CCM:** 69% RNs, 13% OTs, 13% MH Workers, 5%	The authors reported no cost savings between the two groups studied and therefore no rationale for decreasing caseloads. Though the authors identify ICM as the model of focus, they used a team leader in ACT from Boulder Colorado to train the team members.	708 clients diagnosed with psychosis (with history of repeated hospital admissions) were randomly selected from four inner city areas. Costs of care included in-patient, community MH services/CM, medical services, and required social and systems supports (e.g., subsidized and supported housing, police custody, sheltered workshops, etc.).

		other professionals		
44. 2001/Walsh, et al.	This 2-year **pre-post experiment** was designed to evaluate the effectiveness of ACT v. CCM in reducing violence in severe mental illness.	**ACT:** 56% RNs, 24% OTs, 12% MH workers, 8% other professionals **CCM:** 69% RNs, 13% OTs, 13% MH Workers, 5% other professionals	Risk factors for violence were identified as: previous history for violence, younger age, drug misuse, victimization and learning disabilities. There was no statistical difference in the level of violence in either group (ACT: 23%; CCM: 22%). Both groups had similar rates of failed contacts over the course of the study.	708 participants, with an established diagnosis of psychosis (SPMI), were randomly assigned to ACT (N=353) or CCM (N=355). No data were provided on pre-intervention violence. Participants in the ACT group received over twice as many contacts as did the CCM group with significantly more contacts related to the criminal justice system, engagement, finances, and medication.
45. 2007/Wane, Owen, Sood, Bradley & Jones	This **experimental outcomes within-subject control study** examined hospital usage one and two years pre-intervention and 1-year post intervention in 42 rural participants diagnosed with SPMI. Model fidelity was determined using the DACT scale.	**ACT** RNs, psychology, OTs, SWs, & psychiatry	Participants from the cohort were hospitalized 31 times 2 years pre-ACT 44 times one year pre-ACT and only 25 times post-ACT. LOS showed a mean↓ of 37% 2 years pre-ACT and 50% 1-year pre-ACT. Use of leave passes while hospitalized doubled post-ACT. Engagement with services significantly improved post-ACT.	The 42 participants typically had a diagnosis of schizophrenia or schizoaffective disorder, history of multiple hospitalizations, and many with co-morbid substance or alcohol abuse and personality disorders. The authors also measured the number of leaves taken at one & 2 years pre-ACT and compared it to rates 1-year post-ACT.
46. 1999/Wasmer, Pinkerton, Dncin, & Rychlik	This 10 **year retrospective study** (1978-1999) was carried out using service utilization data obtained from charts and first hand accounts from ACT team members caring for 64 ACT clients following ACT intake. These clients were organized into three groups: those who stayed with the ACT team, those who stayed for one episode (average of 18 months), and those who had multiple ACT episodes between more conventional services (e.g. CCM).	**ACT** Staff composition not discussed	The researchers found significant decreases in number of admissions and LOS for each successive year that clients stayed in the ACT program. Those clients who consistently stayed with the program showed the greatest reduction in hospital LOS (56.9 days/10 years) compared to single episode clients (314 days/10 years), and multiple episode clients (301 days/10 years.	The participant sample was identified as having a SPMI though the only characteristics described were frequent admission to the state hospital and homelessness. The sample was purposive and of the 64 initial participants, 55 survived until the end of the ten-year study-the members who died had a mean age of 44.7 years. The researchers did not discuss the skill mix of the staff on the team nor were relative costs of care determined amongst the three groups. Though hospital admission and LOS rates were provided, measures of functioning, psychopathology and

				community integration were not reported.
47. 1993/Wasylenki, Goering, Lemire, Lindsay, & Lancee	The authors of this 9-month **pre-post experiment** compared health and social outcomes for homeless SPMI clients at 9-months pre-ACT and 9-months post-ACT. Referrals to the ACT team came from one of 6 hostels in the Toronto area. Assessments were carried out primarily using the BPRS and SLOF.	**ACT** Staff composition not discussed	Of the 59 participants that remained in the study (83%): **Housing:** 71% less use of shelters, 365% more use of permanent housing. **BPRS:** Symptoms decreased by 38% with the greatest change on the anxious depression subscale. **SLOF:** Social scores increased by 20% with the greatest gains in the self-maintenance subscale. **Social Networks:** The number of social contacts increased 63% (4.9 v. 3.0) with reciprocal relationships and number of confidants showing the greatest change.	71 purposively sampled clients entered the study though 12 were lost to follow-up (through death [2], refusal [2], and unknown location [8]) by the end of the study. The sample were predominantly male, white, 30-40, unmarried, and unemployed. The mean number of years since first episode of homelessness was 8.8 years. Participant diagnosis: 93% Schizophrenia, 3% Affective Disorder, 2% Personality Disorder and 2% Substance Abuse disorder. Interrater reliability was tested and found acceptable.

See Appendix C for a brief description of scales used in this analysis such as the GAF, SLOF, BPRS, etc.

Appendix B: Enduring Outcomes and Staff Characteristics From Acceptable Research

Date/Authors	Model/Location/Outcomes/ Staff Characteristics	Length of Study	Outcomes Short-Term/Enduring	
1. 2003/Barry, Zeber, Blow, & Valenstein	**ACT:** 10:1 **SBCM:** 15:1 Both teams had a physician, nurses, social workers and nurse's aid staff. **Urban**: Michigan Model efficacy	Two years	**ACT:** Increased use of tertiary medical services. Decreased LOS in psychiatric hospitals. Increased service utilization. **SBCM:** Decreased LOS in medical and Psychiatric hospitals. Increased service utilization. Improved scores on BPRS, GAF, positive and negative symptoms. Both: Decreased LOS in psychiatric hospitals. Improved scores on BPRS. Increased service utilization.	Over the course of two years, participants in both groups did significantly better from a service and clinical basis. ACT groups significantly decreased psychiatric admission LOS over SBCM while SBCM showed significantly better scores on BPRS, GAF and the positive and negative symptoms of schizophrenia over the ACT groups. Considering the degree of medical co-morbidity in those diagnosed with a mental illness, increased use of medical services was seen as an asset of using the ACT model.
2. 2004/Ben-Porath, Petereson, & Piskur	**ACT: 10:1** Physician, RNs, SWs, vocational counselors & case managers **Urban:** Northeast Ohio Hospital utilization ER contacts Client satisfaction	3 years	A statistically significant reduction in mean hospital days in each of the three years of the study (reductions of 46%, 80%, and 72% respectively from 1-year baseline). Similarly significant reductions were seen in ER contacts. With a mean score of 5.0 visits in the 1-year pre-ACT, there were reductions of 77% in the 1rst year, 89% in the 2nd year, and 68% in the 3rd year.	An overall reduction of 72% in hospital bed-days and 86% in ER contacts at three years post-intervention compared to 1-year pre-intervention. In addition, there was a significant increase in attendance at psychiatric appointments (117% increase). Clients reported increased satisfaction with ACT case managers and the services they received but were not satisfied with the telephone on-call system or case managers' vocational endeavors.
3. 2001/Bjorkman & Hansson	**ACT, CCM, SBCM:** caseload ratios not given RNs and SWs **Urban:** five locations in Sweden Client satisfaction	**18 months**	Overall, the SPMI participants were satisfied with all three CM models to a statistically similar degree. Not surprisingly, a higher pre-intervention measure of QOL and social support was positively correlated with higher levels of satisfaction post-intervention.	**N/A**

			Levels of satisfaction were not correlated to overall number of contacts or type of intervention (i.e., clinical, rehabilitative or crisis interventions) but were associated with the focus of the intervention (e.g., physical health, advocacy and housing issues).	
4. 2002/Bjorkman, Hannson & Sandlund	**SBCM:** 9:1 2 RNs & 2 SWs psychologist & psychiatrist **Urban:** Sweden Clinical and social outcomes. Service utilization	Three years	**18 months** Though both groups showed improvements in symptoms and social networks, there were no significant differences across groups. GAF, QOL, and Global Well-being were unchanged for both groups throughout the study.	**36 months** There was no difference in clinical or social outcomes at any point between the two groups. There was no significant difference in utilization of services. The SBCM group had significantly reduced LOS (40% less) and needs for care and were more satisfied with the care they received.
5. 1999/Burns, Creed, Fahy, Thompson, Tyrer, & White.	**ACT:** 10-15:1 56% RNs, 24% OTs, 12% MH workers, 8% other professionals **CCM:** 30-35:1 69% RNs, 13% OTs, 13% MH Workers, 5% other professionals **Urban:** 4 MH centres located in London & Manchester, England Clinical Symptoms & social functioning	2 years	No significant differences in outcomes	No significant differences in outcomes
6. 2004/Calsyn, R., Morse, G., Klinkenberg, W., & Lemming, M.	**ACT:** 1:10 Staffing mix not discussed **Urban:** St. Louis, Missouri Working alliance & housing/symptom stability	15 months	None noted	This study found increased housing stability and decreased psychiatric symptoms positively correlated with 3 month client views and 18 month CM views of the working alliance
7. 1998/Clark, Teague, Ricketts, Bush, Xie, McGuire, T. et al. (1998	**ACT: 12:1** **CCM: 25:1** RNs, SWs, psychologist, psychiatrist. (percentages are not available)	3 years	First two years: CCM showed significantly better outcomes per $10,000 spent. Final year: ACT produced significantly better outcomes per $10,000 than CCM.	In the 3rd year of the study, the ACT team was found to be more cost-effective than the CCM team (perhaps supporting the belief that ACT participation need not be time-limited and/or that switching to less costly

	2 Urban and 3 rural health centres located in New Hampshire. Cost-effectiveness Drug use Hospital utilization Forensic involvement Shelter use Family burden			CCM teams may end up costing more in the long run). No significant differences in substance misuse No clear clinical benefit for ACT rather than CCM. CCM was found to be less costly and more effective in treatment of substance abuse and in QOL comparisons.
8. 2001/Cornwall, Gorman, Carlisle & Pope.	**CCM** (within a CPA framework). 12 RNs **Urban & Rural:** North Tynside, UK Effectiveness of CCM within a supportive interdisciplinary and systems model.	3 years	None noted	The evidence indicated that CCM within a team framework was better able to support MH clients that are functioning poorly in the community resulting in decreased hospitalizations and enhanced health care delivery in the community.
9. 2004/Craig, Doherty, Jamieson-Craig, Boocock, & Attafua.	**ACTP (with Peer worker) v. ACT alone Both:** 10:1 8 RNs (plus peer worker on ACTP) **Urban:** United Kingdom Feasibility and impact of employing consumers as health care assistants within an ACT team.	12 months	N/A	No differences in number or length of hospitalizations, measures of self-care, turbulence or responsibility in either group. In addition, there were no significant differences in terms of satisfaction with services or specifically with the staff. Finally, there was no significant difference in the size of the social network between groups across time. ACTP participants showed significantly more engagement with treatment (higher rates of attendance at appointments and in structured social care activities), with improvements in communication and use of social contacts.
10. 1992/Curtis, Millman, Struening, & D'Ercole	**ACT: 35:1** 1-2 psychiatrists, SW, 3 aides, 1-2 drivers **CCM: 35:1** Health professionals (Percentages & types not given) **Urban:** Harlem, NY	52 months	N/A	Interestingly, both ACT and CCM had twice as many participants hospitalized as the control group, over twice as many re-hospitalizations, and 2-2.5 times the total LOS. The authors hypothesized that having a CM resulted in clients receiving hospital care in a timelier manner.

	Hospital utilization Engagement with community services			
11. 1990/Degen, Cole, Tamayo & Dzerovych	**ACT:** 10:1 RNs, SWs, psychiatrists **Urban**: Wisconsin Hospital utilization	15 months	N/A	The participants had 83% fewer admissions 15 months after receiving ACT than in the 15 months prior to admission.
12. 2002/Dekker, Wijdenes, Koning, Gardien, Hernades Willenborg, & Nusselder	**ACT: 13:1** (shared with other nurses) A part-time psychiatrist and 8 nurses **Urban:** Amsterdam, Netherlands Functioning/Symptoms Hospital utilization	2 year	N/A	Year 2: Both groups showed slight improvements in BPRS scores but the ACT group had worse overall scores than the control group. Both groups had a significant decrease in admissions but no interactional differences. ACT: LOS ↓66%, Costs 5%↓ than the control group. Control: LOS ↑34%
13. 1993/Dietzen & Bond	**ACT: 10:1** Staff mix not specified **Urban**: Chicago, Illinois, and Philadelphia Hospital utilization Satisfaction with services Relationship of type/number of contacts to outcomes achieved	12 months	Client characteristics were not associated with changes in outcomes with the exception of gender. Women tended to be more satisfied with services received. Groups with the highest levels of service intensity (averaging **11**/month) had the lowest levels of service utilization while those with **6 or less** contacts had minimal impacts on hospital use. With the exception of hospital utilization, there were no notable associations between sociodemographic variables, intensity of services and outcomes achieved.	N/A
14. 1998/Essock, Frisman, and Kontos	**ACT: 5-7:1** Inter- disciplinary team (psychiatrists, nurses, etc.) **CCM: 25-30:1** RNs & SWs	18 months		ACT clients spent ½ as many days in the hospital, expressed a higher QOL at 18 months, and spent more time living in the community (rather than being homeless, couch-surfing or incarcerated) than the CCM participants. Despite the intensive contacts achieved, there

	Urban: Connecticut			were no significant increases in total costs associated with providing ACT instead of CCM given clients with SPMI.
15. 2006/Essock, Mueser, Drake, Covell, McHugo, Frisman, et al**.**	**ACT:** 10-15:1 Inter- disciplinary team **CCM:** ↑25:1 Inter- disciplinary team **Urban:** Connecticut Harm reduction	3 years	N/A	Both ACT and CCM groups showed significant reductions in drug and alcohol use with 1/3 of the participants in remission by the end of the 3-year study.
16. 1997/Goering, Wasylenki, Lindsay, Lemire, & Rhodes	**ACT:** 15:1 Staff mix not specified **Urban:** Ontario 2 men's and 4 women's hostels Housing & income stability Obtaining suitable treatment Re-connecting to social supports.	18 months	The most significant improvements in housing, symptom reduction and social functioning occurred at 9 months with more modest improvements seen at 18 months.	Continued improvements, at a lesser magnitude on the variables discussed to the left. Higher scores on the WAI were predictive of better social functioning and fewer symptoms.
17. 2005/Gregory & Hovey	**ACT:** 7:1 4 RNs and 3 SWs **Urban:** Gloucester, UK Extended work hours and hospital use	6 months	There were no demonstrated benefits to having an ACT team provide extended work services outside normal Monday to Friday dayshift hours. Such a service was not shown to decrease weekend or overall need for client admissions to psychiatric hospitals.	**N/A**
18. 2003/Habilibis, Hazelton, Schneider, Davidson & Bowling	**ACT:** 20:1 5 RNs, 2 allied health professionals, psychiatrist **Standard CCM:** 30:1 2 RNs **Semi-Rural:** Launceston, Tasmania Effects of assertive outreach	12 months	**Assertive CCM:** Enhanced access to hospital admission through crisis response. Fewer reports of medication side effects.	Though clients in both groups showed improvement in LPS and GAF scores, the study found few significant differences in outcomes between the two groups other than those noted to the left.

19. 2002/Harvey, Burns, Fiander, Huxley, Manley & Fahy	**ACT:** 10-15:1 **CCM:** 30-35:1 RNs, SWs, OTs, psychologists, & psychiatrists **Urban:** UK Multi-site Family support	2 years	**N/A**	The authors found that relatives of clients receiving ACT received increased contact with CM (70% v. 45%). However, there was no data supporting decreased psychological distress or negatively experiencing caregiving in either group (i.e., the CM relationship did not appear to be correlated with decreased caregiver burden).
20. 1993/Hornstra, Bruce-Wolfe, Sagduhu, & Riffle	**ACT: 9-30** Staff mix not discussed **Urban:** Kansas City Hospital utilization Engagement with community services	2 years	**N/A**	Type of model not shown to affect hospitalization use. Though ACT participants had less clients hospitalized for fewer days, the differences were not considered statistically significant
21. 1995/Jerrell	**ACT:** 15-20:1 3 nurses, 2 inter-disciplinary staff, one psychiatrist, & one supervisor **CCM:** 35-45:1 4 SWs and one Psychiatrist **BCM:** 15-18:1 Paraprofessional staff **Urban:** not indicated (USA) Cost effectiveness Psychosocial functioning Improved psychiatric symptoms	18 months	**N/A**	**Costs:** ↓BCM, =CCM and ↓ACT by the end of the study. Costs did not differ significantly between groups. **Psychosocial functioning**: ACT=CCM=BCM **Improvement in psychiatric symptoms**: ↑CCM, ↓BCM/ACT Given the cost-effectiveness of all three teams, the authors argue that providing ACT with higher caseloads may offset costs while maintaining positive health outcomes.

22. 1998/Johnson, Salkeld, Sanderson, Issakidis, Teeson & Buhrich.	**ACT: 8-10:1** **CCM: 20-40:1** Both teams were comprised of interdisciplinary professionals. Type and percentages were not discussed. **Urban:** Sidney, Australia Cost effectiveness	12 months	**6 months** **ACT:** Higher retention rates **CCM:** Lower retention rates	**12 months** **ACT:** 51% of clients showed significant clinical improvement. Fewer after hours needs. The mean cost of yearly care was $24,975 CAN ($6,694 more than CCM) **CCM:** 24% of clients showed significant clinical improvement The mean cost of yearly care was $18,280 ($6,694 less than ACT) 4 times as many after hour needs as ACT group. **Both Groups:** No statistical differences in psychiatric hospitalization rates
23. 1998/King	**ACT**: 9:1 1 psychiatrist, 3 social workers and one advanced practice nurse. **BCM:** 9:1 3 graduate level social workers and a psychiatrist An advanced practice nurse was available for consultation and treatments. **Urban:** Detroit, Michigan Psychosocial functioning (GAF) Hospital admissions Length of stay (LOS)	12 months	The ACT and BCM participants had significant increases in GAF scores, and decreases in admissions and LOS. However, in inter-group comparisons there were significant differences only in relation to the number of admissions (less with ACT) over the 12-month period.	**N/A**
24. 1993/Lehman, Herron, Schwartz & Myers	**ACT:** 15:1 **CCM:** 25:1 Staff characteristics not discussed **Urban:** Maryland Reduction of Substance Use Level of Engagement. Comparison of ACT as an add on to a	1 year	There were no statistical differences between substance use and engagement measures in the intervention or control group.	N/A

	the services provided by CCM in a Psychosocial Rehabilitation Centre			
25. 1994/Macias, C., Kinney, R., Farley, W., Jackson, R. & Vos, B. (1994	**SBCM:** 10:1 (2) ½ time baccalaureate health professionals* and one non-professional worker **PRP** (psychosocial rehabilitation program): 5:1 1 masters level & one baccalaureate level health professional* plus 2 non-professional workers * Professional affiliations not described. **Urban:** Logan, Utah Hospital & crisis centre use Psychiatric symptom reduction Functional levels in the community Family burden	**Stage I:** 12 months **Stage II:** 18 months pre- and post-intervention	**SBCM:** participants averaged 5 CM contacts per month (most had between 2 and 10). Participants, family and staff saw improvements in mood and thinking but had differing perceptions in regards to social functioning, physical health, self-care & ability to manage their own money. **PRP:** participants averaged 2 contacts per week or 8-10 contacts per month.	There was consensus on improvements to mood, thinking and productivity but inconclusive results in all other areas of assessed health and functioning. There were no admissions to the hospital in the SBCM group (5 admissions pre-intervention) and a reduction in crisis calls of 58%. The control group had a 50% increase in hospitalizations and an 81% increase in crisis calls during the same period.
26. 2006/Macias, et al.	**ACT** (10:1) RNs, case managers, psychologists, addiction & vocational specialists **Clubhouse Models** Staff characteristics were not discussed **Urban:** Massachusetts, Connecticut, and South Carolina. Vocational outcomes	2 years	N/A	**Clubhouse**: This multi-service model was found to be a cost-effective alternative to more expensive and specialized vocational services. Clubhouse was more effective in keeping participants employed (for longer periods, with greater hours worked and earning more). **ACT:** This model was found to be superior in providing vocational education and support to clients who needed more intensive clinical care. The ACT program was the most effective at keeping clients engaged in program services.

27. 1990/McRae, Higgins, Lycan, & Sherman	**ACT:** 9:1 8 CMs, a supervisor and a full-time psychiatrist **CCM:** 50:1 Staff characteristics not discussed **Urban;** Spokane, Washington Hospital utilization Engagement Cost Effectiveness	Seven years	N/A	Engagement and hospital utilization remained unchanged after two years supporting the researcher's beliefs that ACT can be time limited without increasing inpatient costs.
28. 2004/Meaden, Nithsdale, Rose, Smith, & Jones	**ACT:** 10-15:1 Staff characteristics not discussed **Urban:** UK Engagement as a predictor of Psychiatric hospital use (admissions and LOS).	**12 months**	Clients who found their treatment "useful" and reported good client-therapist interactions were correlated negatively with number of admissions and LOS (↓LOS). "Compliance with medication" and "appointment keeping" did not correlate with hospital admissions or LOS.	N/A
29. 1997/Meisler, Blankertz, Santos, & McKay	**ACT: 10:1** **ACT:** 10:1 ½ psychiatrist, MSW, 2RNs, 7 masters & baccalaureate level counselors (SW, vocational, addictions, etc.) **Urban:** Delaware Engagement Employment Substance use Housing stability Hospital utilization Incarceration	4 years	Not reported	**Substance use:** 59% continued to experience difficulties. 41% were either abstinent or "mild" users. **Housing:** All were homeless at baseline. At 48 months-81% housed independently, 9% in transitional housing, 4% respectively in jail or hospital, and 3% homeless. The non-housed were exclusively those with a pre-existing severe substance abuse diagnosis. **Employment:** 43% were competitively employed (no difference in sub-groups abusing drugs/alcohol) **Hospitalizations:** 75% had no admissions (no difference in sub-groups abusing drugs/alcohol) **Arrests/Incarcerations:** Significantly fewer arrests (0.35 mean arrests for all 114 participants.

30. 2002/Minghella, Gauntlett, & Ford	**Both 15:1** **ACTG** (6 generic workers) 6 generic workers (2 with "clinical qualifications") **ACTP** (5 CMs with professional qualifications) SW, 2 RNs, PT psychologist, housing liaison worker. **Urban:** West Haringey & Hammersmith, UK Clinical & social outcomes Service use/cost effectiveness Client satisfaction	12 months	N/A	Fidelity: Only moderate levels of fidelity with these two groups Client Characteristics: ACTG: improvements in 4 of 5 social domains and 3 of 4 HoNOS domains. There were no significant changes in BPRS or QOL scores. ACTP: participants had significant improvements in dealing with social problems, taking responsibility and in their living situation however no other changes were found in any of the other subscales. Neither team showed changes in the objective measures of QOL Service Use: Measures of pre and post intervention showed significantly higher costs associated with providing either of these two teams. The participants in the ACTG group showed significant outpatient increases in contacts with nurses and psychiatrists. Client Satisfaction: 80-96 % of ACTG clients were satisfied with the service compared to 65-88% of the ACTP group.
31. 2002/Nieves,E.	**ACT**: 7:1 Staff with BA or higher degree, nursing, psychiatrist (no percentages given) **Day-Treatment** services: 50-70:1 **Urban**: South Bronx, NY QOL, Housing/symptom stability, hospital use	One year or less	There were no fewer hospital rates in either group. Employment rates were consistently low for both models. Greater housing stability was not supported in the ACT model. Personal goals attainment related to medication management, health care, relationships and household management were correlated more strongly in the ACT model.	None identified
32. 2000/N. P. Preston ACT	**ACT**: 10:1 ½ psychiatrist, 2 SW, 2 RNs **EP** ½ psychiatrist, psychologist, SW, 2	Three years	Cox regression analysis indicated increased community survival for clients as scores in living skills and non-turbulence (measuring violence to self or others, etc.) increased.	EP relapses at 25 months compared with 11 months for schizophrenia clients. The differences in treatment outcomes, with the exception of relapse rates, were related to

	RNs **Urban**: Australia Looked at efficacy of ACT in treating EP v. chronic schizophrenic clients.			client characteristics rather than stage of illness; e.g., increased scores in measured life skills improved community survival and clients with high non-turbulence scores remained in the community twice as long (18.3 months) as those with low scores.
33. 2000/Preston & Fazio	**ACT:** 10:1 **CCM:** 30:1 Staff characteristics not discussed **Urban:** Fremantle, Australia Model cost comparison	One year retrospective Two year longitudinal.	**ACT:** Increased service utilization. Increased contact with the ACT team (increased from once weekly to 3-4 times weekly). **CCM:** No significant change in service utilization or CCM team contact (remained at approx once weekly).	Both showed cost savings, largely through decreased use of inpatient LOS. CCM savings were $ 282,476 (CAN) and ACT savings were $999,397 for the two-year period-a significant difference of $692,753 between treatment models.
34. 2003/Priebe, et al..	**ACT: 10:1** **ACT: 10:1** 56% RNs, 24% OTs, 12% MH workers, 8% other professionals **Urban:** London, England Efficacy of 3 slightly different ACT models	9 months	All three ACT groups had Significantly **d**ecreased incidence of compulsory treatment orders, hospitalizations and LOS in acute psychiatric units.	None measured
35. 1997/Ryan, Sherman & Bogart	**SBCM:** 20:1 Staff characteristics were not discussed **Urban:** Denver, Colorado Cost Effectiveness (enhanced discharge)	12 months	The authors found that **clients receiving housing and financial support & training and social rehabilitation early in the relationship** tended to be short-term clients and required less service as the first year of service progressed. Clients who received rehabilitative services later in the relationship tended to have worse outcomes.	**N/A**
36. 2006/Schonebaum, Boyd, & Dudek	**ACT:** 10:1 RNs, case managers, psychologists, addiction & vocational specialists **Clubhouse Models** Staff characteristics were not discussed	30 months	Both groups showed equally successful employment rates within the first 8 weeks of the study.	No significant differences in job placement rates or weekly employment rates between the two models. Both models matched or bettered benchmark rates set by individual placement & support models. The average participant in both studies worked more than one job during the study . . . there was no significant difference in total

	Urban: Worcester, Massachusetts The efficacy of each model in vocational outcomes			jobs worked. However, Clubhouse participants worked significantly more weeks per job and earned significantly more (17% higher) than ACT participants.
37. 2006/Sells, Davidson, Jewell, Falzer, & Rowe**.**	**CCM (with v. without peer providers).** Peer providers had lower caseloads (10-12:1) than professional CCM (20-25:1) Staff characteristics were not discussed **Urban:** Connecticut Engagement	12 months	The clients who were seen by peers providers increased contact by 8% (averaging 7.6 visits in the 6th month) compared to clients seen by professional CCMs with contact decreased by 66% (averaging 1.83 visits/client in the 6th month)	Peer providers were found to possess distinctive skills in communicating positive regard, understanding and acceptance of poorly engaged clients early in their treatment. The experimental group consistently scored higher than the control group in all three areas of engagement and had higher rates of systems use (attendance at appointments, AA or NA groups, etc.).
38. 1995b/Solomon & Draine	**ACT(C):** 10:1 **ACT:** 10:1 Staff characteristics not discussed **Urban**: Philadelphia, PA	12 months	There were no significant differences between ACT(C) and ACT alone in terms of social or clinical outcomes. However, clients in the ACT(C) group were less satisfied with CM services and had significantly less contact with families by the end of the study (the authors felt this might be due to client-provider bias by the clients and there families).	N/A
39. 2007/ Sytema, S., Wunderink, L., Bloemers, W., Roorda, L., & Wiersma, D.	**ACT**: 10:1 (4.1 on DACT scale) Psychiatrist, psychologist, SW, RN, addictions specialist, and a non-professional worker **CCM**: 40:1 Psychiatrist, psychologist, SW, RN **Rural**-Netherlands (town of 18,000 plus 62,000 in surrounding villages) Model efficacy	Up to two years (study conducted between April 2004 and August 2006).	No immediate outcomes noted.	ACT found to be significantly better than CCM in maintaining contact with those diagnosed with SPMI.
40. 1999/Tibbo, Chue, & Wright	**ACT:<20:1** 17 psychiatrists, 24.2 RNs **Urban:** Edmonton, Alberta	2 years	<u>1-year post ACT</u> **Admissions:** Reduction of 34% (↓128 fewer admissions) **Length of Stay (LOS)**: Reduction of 56%	**N/A**

	Hospital utilization		(↓11,836 bed days) **ER Visits**: Reduction of 32% (↓253 visits)	
41. 2001/ Tibbo, Joffe, Chue, Metelitsa & Wright	**ACT: 10:1** 17 psychiatrists, 24.2 RNs **Urban:** Edmonton, Alta Measure of GAF scores pre and post ACT	3 years Measures at baseline, 18 months and 36 months.	**ACT** The changes in GAF scores as measured by primary diagnosis, though considered significant statistically (+6.5-11.7), did not support huge gains in functional status.	The most significant change in those with a low GAF score occurred in the first 18 months with additional modest gains at 3 years. Changes in GAF scores of those with a GAF ↓40 showed significant and observable functional change (an increase from a GAF from approx. 33 to approx. 55).
42. 2005/Udechuku, et al.	**ACT:** 8-12:1 6 RNs, one OT, ½ psychiatrist **Urban:** NE Melbourne, Australia Cost-effectiveness	12 months ACT to 12 months post.	**ACT** N/A	The research data supported the hypotheses that clients receiving ACT in her area showed a significant reduction in psychiatric admissions (42%) and LOS (reduction of 85%) for a cost savings to the health authority of approximately $11960 (CAN) per annum per client.
43. 2000/UK700 Group	**ACT:** 10-15:1 56% RNs, 24% OTs, 12% MH workers, 8% other professionals **CCM:** 30-35:1 69% RNs, 13% OTs, 13% MH Workers, 5% other professionals **Urban:** UK Multi-site Model cost comparison	2 years	**N/A**	**ACT:** costs $48,461 (CAN) **CCM:** costs 44,809 (CAN) $3652(CAN) difference in costs per client over two years. This amount is considered statistically non-significant.
44. 2001/Walsh, et al.	**ACT:** 10-15:1 56% RNs, 24% OTs, 12% MH workers, 8% other professionals **CCM:** 30-35:1 69% RNs, 13% OTs, 13% MH Workers, 5% other professionals **Urban:** 4 sites in London and Manchester, England Reducing violence	2 years	**N/A**	There were no statistically significant differences in the incidence of violence between the 2 groups (ACT: 23%; CCM: 22%) despite the fact that the ACT participants received more than twice as many contacts as did the CCM group.

45. 2007/Wane, Owen, Sood, Bradley & Jones	**ACT:** 10:1 **ACT:** 10:1 RNs, psychology, OTs, SWs, & psychiatry **Rural:** South Warwickshire, England Hospital use Engagement	12 months	Participants from the cohort were hospitalized 31 times 2 years pre-ACT 44 times one year pre-ACT and only 25 times post-ACT. LOS showed a mean↓ of 37% 2 years pre-ACT and 50% 1-year pre-ACT. Use of leave passes while hospitalized doubled post-ACT. Engagement with services significantly improved post-ACT.	N/A
46. 1999/Wasmer, Pinkerton, Dincin, & Rychlik	**ACT:** 10:1 Staff composition not discussed **Urban:** Chicago, Illinois Engagement & hospital use	10 years	Immediate reductions in hospital admissions and lengths of stay.	Reductions in hospital bed use consistent throughout tens years of contact with ACT team. No such evidence for clients that either broke off contact after the first episode or broke contact between a numbers of ACT episodes.
47. 1993/Wasylenki, Goering, Lemire, Lindsay, & Lancee	**ACT:** 15:1 Staff composition not discussed **Urban:** Toronto Residential stability Psychiatric symptoms Social functioning/social networks Engagement in MH services	9 months	**Housing:** 71% less use of shelters, 365% more use of permanent housing. **BPRS:** Symptoms decreased by 38% with the greatest change on the anxious depression subscale. **SLOF:** Social scores increased by 20% with the greatest gains in the self-maintenance subscale. **Social Networks:** The number of social contacts increased 63% (4.9 v. 3.0) with reciprocal relationships and number of confidants showing the greatest change.	**N/A**

See Appendix C for a brief description of scales used in this analysis such as the GAF, SLOF, BPRS, etc.

Appendix C: Details of Instruments/Scales Used

Brief Psychiatric Rating Scale (BPRS)

A 24-item scale used to assess the severity of a range of psychotic, affective and behavioural psychiatric symptoms on a scale of 1 (not present) to 7 (extremely severe). The scale ranges from 24-168 points with higher scores indicating greater severity of symptoms.

(From: Leucht, et al.. (2005). Clinical implications of Brief Psychiatric Rating Scale scores. *British Journal of Psychiatry, 187,* 366-371.)

Camberwell Assessment of Needs (CAN)

This is a 22-item scale measuring mental health clients' needs over the last month for care and support in the community. The scale is available in geriatric, forensic, adult, perinatal and co-morbid (learning disabled) versions. The items include sections on accommodation, food, self-care and home skills, psychotic symptoms, etc.).

(From: The King's College Website: http://www.kcl.ac.uk/)

Dartmouth Assertive Community Treatment Scale (DACT)

A 28-item scale measuring the degree of ACT fidelity inthreedimensions: human resources (e.g., small caseload, psychiatrist on staff), organizational boundaries (e.g., explicit admission criteria), and nature of services (e.g., *in vivo* services). The scale measures each item on a 5-point behaviourally anchored scale ranging from 1 = not implemented to 5 = fully implemented

(From: Salyers, et al. (2003). Is it ACT yet? Real-world examples of evaluating the degree of implementation for Assertive Community Treatment. *Journal of Behavioural Health Sciences and Research, 30*(3), 304-320.)

Experience of Caregiving Inventory (ECI)

The ECI is a 66-item self-report questionnaire to measure caregivers' appraisal of the caregiving experience. The main measures are positive and negative aspects of caregiving. The 5-point scale is anchored at "never" and "always or nearly always" and relatives report the frequency with which they have thought about each item during the preceding 4 weeks.

(From: Tennakoon, L., Fannon, D., Doku, V., O'Ceallaigh, S., Soni, W. & Santamaria, M. (2000). Experience of caregiving: Relatives of people experiencing a first episode of psychosis. *British Journal of Psychiatry, 177*, 529-533.)

General Health Questionnaire (GHQ)

A 12-item scale that measures psychological distress. This 4-pont scale rates the frequency with which participants have experienced 12 indicators of psychological distress during the precedingfourweeks. A higher score indicates psychological distress.

(From: Montazeri, A., Harirchi, A., Shariati, M., Garmaroudi, G., Ebadi, M., & Fateh, A. (2003). The 12-item General Health Questionnaire (GHQ-12): Translation and validation study of the Iranian version. *Health Quality Life Outcomes, 1*, 66)

Global Assessment of Functioning Scale (GAF)

A clinician-rated assessment of overall functioning based on a scale of 1-100 (in 10 point increments). Lower scores are indicative of increased pathology resulting in decreased functioning.

(From: Marshall, M., Gray, A., Lockwood, A., & Green, R. (1997). Case management for people with severe mental disorders. *Cochrane Database of Systematic Reviews*, Issue 2.)

Groningen Social Behaviour Questionnaire-100 (GVSG-100)

This 100-item self-report scale measures social functioning and has been found to negatively correlate with the GAF (i.e., a low score on the GVSG-100 correlates to a low GAF score) when applied to persons with SPMI. The GVSG-100 measures self-care, citizen role, home role, and daily activities.

(From: Trompenaars, F., Masthoff, E., Van Heck, G., de Vries, J., & Hodiamont, P. (2007). Relationships between social functioning and quality of life in a population of Dutch adult psychiatric outpatients. *International Journal of Social Psychiatry, 53*(1), 36-47.

Health of the Nation Outcome Scale (HoNOS)

The HoNOS is an instrument with 12 items measuring behaviour, impairment, symptoms and social functioning. This scale has been widely and extensively used in Great Britain, Italy, Australia and other countries since 1993 to measure the physical and psychosocial health of persons with severe mental illness.
(From the Royal College of Psychiatrists' website: www.rcpsych.ac.uk/crtu/honos.aspx)

Interview Schedule for Social Interaction (ISSI)

The ISSI is a 30-item questionnaire designed to assess the availability and adequacy of social relationships in regards to access to and adequacy of social integration and emotional relationships for persons diagnosed with a mental illness.
(From: The PubMed Website: www.ncbi.nlm.nih.gov/)

Kaplan-Meyer Survival Analysis

In clinical trials the investigator is often interested in the time until participants in a study present a specific event or endpoint. This event usually is a clinical outcome such as death, disappearance of a tumor, etc.

The participants are followed beginning at a certain starting-point, and the time recorded for the event of interest to occur.
(From: http://www.medcalc.be/index.php retrieved 19 November 2007)

Life Skills Profile (LSP)

4-point scale used to assess general functioning over the lastthreemonths. Yields scores between 39 (poorest functioning) to 156 (no problems in functioning). Those with scores 116.5 and below were likely to need hospitalization whereas those with scores above were likely to be found in the community.

(From: Habibis, D., Hazelton, M., Schneider, R., Davidson, J. & Bowling, A. (2003). Balancing hospital and community treatment: Effectiveness of an extended-hours community mental health team in a semi-rural region of Australia. *Australian Journal of Rural Health, 11,* 181-186.)

The Positive and Negative Symptom Scale (PANSS)

Based on two established psychiatric rating systems, the 30-item PANSS was conceived as an operationalized, drug-sensitive instrument that provides balanced representation of positive and negative symptoms and gauges their relationship to one another and to global psychopathology. It thus constitutes four scales measuring positive and negative syndromes, their differential, and general severity of illness.

(From: Kay, S., Fiszbein, A. & Opler, L. (1987. The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophrenia Bulletin, 13*(2), 261-76)

The Quality of Life Scale (QOL)

A standardized Likert-like 7-point scale measuring participants' subjective quality of life and addressing questions about home life, leisure activities, relationships and finances.

(From: Marshall, M., Gray, A., Lockwood, A., & Green, R. (1997). Case management for people with severe mental disorders. *Cochrane Database of Systematic Reviews,* Issue 2.)

Rosenberg Self-Esteem Scale

This ten-item self-reporting questionnaire is Likert-based with items answered on a four-point scale; from strongly agree (SA) to strongly disagree (SD). The original scale was developed based on a study of 5,024 High School students from 10 randomly selected

sites in New York State. The questions are equally balanced for positive and negative statements about oneself.
(From: http://www.atkinson.yorku.ca/ retrieved 19 November 2007)

Social Level of Functioning (SLOF)

The SLOF (Schneider & Struening, 1983) is a 43-item assessment scale measuring three functional domains in those diagnosed with schizophrenia; self-maintenance, social functioning, and community living skills
(From: Chien, W., Chan, S., & Thompson, D. (2006). Effects of a mutual support group for families of Chinese people with schizophrenia: 18-month follow-up. *British Journal of Psychiatry, 189*, 41-49.)

Substance Abuse Treatment Scale (SATS)

This 8-item scale assesses the client's readiness to address and/or change substance use over the last six months. The scale goes from "pre-engagement" (client meets criteria for substance abuse or dependence but does not have contact with a counselor) to "recovery" (client has not met the criteria for substance abuse or dependence for more than the past year).

Symptom Checklist-90 (SCL-90)

This 90-item tool assesses psychological problems and symptoms of psychopathology using a five-point scale. The scale is used for psychiatric patients older than 13 years and requires a grade six reading level.
(From: Derogatis, L. (2007). SCL-90-R (Symptom Checklist-90-Revised). Retrieved 23 November 2007 from www.pearsonassessments.com/tests/scl90r.htm).

The Working Alliance Inventory (WAI)

12-item version assesses the alliance from the perspective of both the client and the CM. Respondent indicate the level of agreement from 1 = never to 7 = always. Higher scores indicate a more positive view of the working alliance.

(From: Calsyn, R., Morse, G., Klinkenberg, W., & Lemming, M. (2004). Client outcomes and the working alliance in assertive community treatment programs. *Care Management Journals, 5*(4), 199-202.).