Biobehavioral Treatment and Rehabilitation of Schizophrenia

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The psychopathology and associated disabilities experienced by persons with schizophrenia have only partially responded to conventional pharmacological and psychosocial treatment approaches. Biobehavioral treatment and rehabilitation employs behavioral assessment, social learning principles, skills training, and a focus on the recovery process to amplify the effects of pharmacotherapy. Utilizing the *Medline* database, we review a selection of English-language studies published from 1970 to 1994 that support the effectiveness of each of the components of biobehavioral therapy, such as case management, psychopharmacology with behavioral assessment, psychoeducation, family involvement, and social skills training. An integrated biobehavioral therapy directed toward early detection and treatment of schizophrenic symptoms, collaboration between consumers and caregivers in managing treatment, family and social skills training, and teaching coping skills and self-help techniques has been documented to improve the course and outcome of schizophrenia, as measured by symptom recurrence, social functioning, and quality of life. A case vignette is presented to illustrate the successful integration of biobehavioral therapies into a treatment system that focuses on consumers' attempts to become increasingly responsible for recovering from illness. (HARVARD REV PSYCHIATRY 1995;3:55–64.)

Schizophrenia can no longer be viewed as a chronic, inexorably deteriorative disorder with no hope for rehabilitation or recovery. Although many people with schizophrenia suffer considerable disability throughout a major portion of their lives,[1] long-term outcome studies from the United States, Europe, and Japan have repeatedly demonstrated that when people with severe forms of schizophrenia are evaluated 20–40 years after the most disabling period of their illness, more than half are functioning in a reasonably normal way.[2–4] These data indicate that the outlook for people diagnosed with schizophrenia is not necessarily bleak; recovery from the illness may be possible if continuous access to treatment and rehabilitation is provided. This hopeful attitude has contributed to the growth of biobehavioral technology for schizophrenia, using new and more effective medications, as well as improved psychosocial and behavioral treatments, to accelerate remission of symptoms, recovery of social and vocational functioning, and betterment in quality of life.

Biobehavioral treatment and rehabilitation refers to a set of techniques designed and tested at the University of California at Los Angeles Clinical Research Center for Schizophrenia and Psychiatric Rehabilitation. In this paper we will review the components of this treatment, recognizing that it is but one approach within the range of rehabilitation modalities that exist in the field. A comprehensive

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review of the variety of psychiatric rehabilitation approaches is beyond the scope of this paper but can be found elsewhere.[5]

CONSUMERISM AND SELF-HELP

People with major mental disorders are no longer content to remain in a passive role with their doctors and other service providers—they prefer to see themselves as consumers of mental health services with an active interest in learning about their disorders and selecting their treatments. They now increasingly insist upon an informed collaboration with their professional treaters. The convergence of the consumerism movement[6] with the development of clearinghouses providing information and referral services to self-help groups[7] has contributed to the rise of a "self-help ethos,"[8] a value system that includes empowerment and self-determination, but not a radical antipsychiatry philosophy.[9]

The shift of the consumer movement to a partnership with professionals, combined with clinicians' recognition that hierarchical and authoritarian relationships with consumers are frequently destructive to the therapeutic alliance,[10,11] has created a window of opportunity for a truly cooperative working relationship. In recognition of this shift, we will be using the term "consumer" throughout this paper when referring to people who utilize the mental health system for treatment.

DERIVATION OF THE GOALS OF BIOBEHAVIORAL THERAPY

The rehabilitation practitioner uses the terms "impairment," "disability," and "handicap" to describe the problems faced by consumers with schizophrenia. In the vulnerability-stress-coping-competence model of schizophrenia,[12,13] it is presumed that socioenvironmental stressors, superimposed on an underlying and enduring biological vulnerability, lead to abnormalities in central nervous system function when a vulnerable individual is inadequately protected by antipsychotic medication, social competence, and a supportive social network. These central nervous system abnormalities appear as impairments in information processing and psychophysiological states and as symptoms (e.g., distractibility, overarousal, thought disorder). When pervasive, persistent, and severe, impairments lead to disabilities in an affected person's social and occupational functioning (e.g., loss of job due to intrusive voices and trouble concentrating). If these disabilities continue without any accommodation in the person's social and vocational environment, the result is a social role handicap. For example, an unyielding work and family system may ostracize someone suffering from voices and distractibility from his or her role as a worker and even as a participating family member.

Although clinicians cannot change the underlying biomedical vulnerability or eliminate the stressors that are inevitably present in the community, they can work to build protective factors to buffer consumers from the noxious influences of vulnerability and stress. The stress-vulnerability framework elucidated above, joined with the rehabilitation view of disability, can generate a coherent set of treatment goals for people with schizophrenia. The goals of treatment and rehabilitation are to engage the individual in establishing personally relevant, realistic, and desired goals for life functioning; to ameliorate positive and negative symptoms of the disorder that interfere with the attainment of personal goals; to prevent or delay relapse of psychosis; to strengthen the skills and coping capacities of the afflicted individual and natural caregivers, such as family members; to remove or displace the bizarre and deviant behaviors that are intolerable for the family or community; and to provide services and compensatory community supports that enable the individual to function optimally, despite continuing symptoms and disabilities.

The significance of this multifactorial stress–vulnerability–protective factor model of schizophrenia lies in the guidelines that it offers to clinicians. Antipsychotic drugs buffer the psychobiological vulnerability and underlying biochemical disturbance in neurotransmitter systems; training in social and independent living skills confers coping capacities and thereby strengthens the individual's and caregivers' personal protection against stress and vulnerability; supportive services (e.g., case management, housing, social-service entitlements, supported employment) compensate for residual symptoms and deficits in functioning. Careful orchestration of pharmacotherapy, skills training, and community support services within the matrix of an effective means of flexibly delivering all interventions, as required by changing individual needs, can significantly improve the course and outcome of the disorder as well as promote recovery in a substantial number of persons.[14,15]

COMBINING PSYCHOPHARMACOLOGICAL AND BEHAVIORAL TREATMENTS

Historical perspectives

Pharmacological and psychosocial therapies have long been used in the treatment of schizophrenia and other chronic psychotic disorders. Although neuroleptic drugs have been effective in improving positive symptoms of schizophrenia, they have had only minimal effect on the negative symptoms, have had no appreciable effect on the more than 35% of consumers with treatment-refractory illness, and may

have adverse effects on social and vocational functioning. Moreover, the course and outcome of schizophrenia has not been appreciably modified by individual psychotherapy,[16] conventional family therapy,[17] or group therapy.[18]

However, the past decade has brought significant advances in our understanding of the interaction among these therapies. We now realize that effective treatment requires specially designed and individualized pharmacological and psychosocial therapies that are embedded in a comprehensive matrix of rehabilitative services.[19] The psychosocial treatments of choice for schizophrenia and other chronic and disabling psychoses are behavioral in orientation. Although different psychotherapeutic modalities for depression have not yielded significant clinical differences in outcome,[20] behaviorally inspired therapies have consistently shown clinical superiority over supportive or insight-oriented approaches in the treatment of schizophrenia.[21] These behavioral therapies and allied community-based services include token economy,[22] social skills training,[23] intensive case management,[24] vocational rehabilitation,[25] and behavioral family therapy.[26]

Psychopharmacotherapy as a prerequisite to behavioral therapy

Elimination—or optimal control and stabilization—of psychotic symptoms is of the highest priority in the biobehavioral treatment and rehabilitation of persons with schizophrenia. Prompt intervention with judicious use of antipsychotic drugs is a prerequisite for psychosocial and behavioral treatments because effective pharmacotherapy removes or ameliorates intrusive symptoms and improves cognitive functioning, thereby making afflicted individuals more responsive to learning from their environments.[27] In addition, recent follow-up studies[28] have shown that delay in instituting pharmacotherapy is associated with a poorer long-term prognosis in schizophrenia. Schizophrenia has proven refractory to drug treatment alone in a substantial number of people with the illness, although many of these individuals show improvement in their psychotic symptoms when they receive focused and intensive behavior therapy in addition to the antipsychotic medications.[22,29,30]

All neuroleptic medications appear to be equally effective in the treatment of schizophrenia, with the exception of clozapine, which has improved the condition of many consumers whose illness has been refractory to more-conventional antipsychotic medications.[31] However, unlike clozapine, risperidone, and newer experimental agents, traditional neuroleptics appear to have significant cognitive and behavioral toxicities. These medications can produce marked restlessness, anhedonia, apathy, dysphoria, and parkinsonism.[32] Such side effects can worsen a person's ability to attend to a task and have been shown, for instance, to impair vocational rehabilitation.[33,34] Indeed, researchers have recently found that neuroleptics often have a "therapeutic window," with doses below or above this window causing a reduced benefit-to-risk ratio.[35] This finding has emphasized the need for careful titration of neuroleptic dose utilizing biobehavioral end-points.[36]

Improving pharmacotherapy with behavioral assessment

With pharmacotherapy of psychotic symptoms the priority element in the treatment and rehabilitation of persons with schizophrenia, the effectiveness of drug treatment depends on the clinician's ability to elicit, rate, and monitor symptoms, leading to appropriate adjustments (or maintenance) of type and dose of medications (and any changes necessary in crisis services and skills training). Several instruments have been developed to detect and monitor psychiatric symptoms. The Brief Psychiatric Rating Scale[37] was designed to assess a wide range of psychopathology in inpatient populations, with particular emphasis on the positive symptoms of psychotic disorders. This instrument has been expanded to 24 items and has a companion manual designed to extend its use to outpatients with serious mental disorders.[38,39] Guidelines are given for a semistructured interview containing operational definitions for anchor points in each symptom category.

The expanded version assesses many nonpsychotic symptoms, such as anxiety, tension, depression, and emotional withdrawal, that increase prior to a full-blown relapse. Effective treatment with appropriate types and judicious doses of medication has been demonstrated by titrating the medication against repeated measures of these behavioral benchmarks.[40,41] The Brief Psychiatric Rating Scale has recently been found to be a highly reliable instrument for behavioral assessment when raters undergo a training and quality-assurance program.[42]

From noncompliance to collaboration in treatment

Although ample research evidence supports the efficacy of neuroleptic medications in ameliorating symptoms and delaying relapse in schizophrenia, consumers' adherence to maintenance antipsychotic drug-treatment regimens has long been recognized to be extremely poor.[43] Traditional understanding of this problem has focused on the consumer's inability to follow the psychiatrist's treatment plan. An alternative view recognizes this situation not as the consumer's failure to comply, but rather as a lack of collaboration between consumer and clinician or a deficiency in the accessibility or outreach efforts of the mental health delivery system. For example, a consumer's failure to continue on maintenance medication does not derive from a lack of

motivation but from a rupture in the therapeutic alliance. The task in treatment becomes to mobilize the consumer's assets and resources (including the family) to cooperate in a treatment partnership, sharing responsibilities for adherence to mutually-agreed-upon treatment prescriptions.

Noncompliance is a serious problem of public health magnitude, and the clinician must be sensitive to a variety of barriers that lie in the pathway of a therapeutic partnership. The most common obstacles can be divided into five domains: treatment techniques, consumer characteristics, family characteristics, clinician-consumer relationship, and treatment-delivery system.[43] The difficulties in each of these categories require corrective measures designed to prevent or repair rifts in the therapeutic relationship. For example, the cognitive deficits of schizophrenia can be overcome by using a simplified treatment regimen (e.g., once-daily dosing) or a compartmentalized pillbox, or by enlisting a trusted and reliable third party—roommate, relative, or caregiver—to facilitate the consumer's regular adherence to the medication regimen.

Barriers to the treatment alliance that develop in the clinician-consumer relationship may be more difficult to remedy. Avoidant, suspicious, or unmotivated consumers may lead clinicians to experience individuals with severe mental illness as frustrating, difficult to treat, hopeless, and unrewarding. Since a major contribution to the quality of the therapeutic alliance derives from the clinician having the perception of success and progress through competence, practitioners treating people with schizophrenia must set mutually-agreed-upon goals that are realistic, modest, and incremental. When the clinician assumes responsibility for improving collaboration with the consumer by imparting needed information and skills, the consumer becomes more satisfied, more responsible, and more reliable.[44]

SOCIAL SKILLS TRAINING

Overview

Even with appropriate management of medication, yearly relapse rates for persons with schizophrenia are often as high as 40%. And many consumers continue to suffer from the "negative" symptoms of schizophrenia, which do not respond as well as the classic "positive" symptoms to neuroleptic medications.[45] Although various definitions exist, negative symptoms generally include social withdrawal, flat affect, alogia (i.e., poverty of speech), apathy, and anhedonia. In addition, neuroleptics do not improve social skills, which are prerequisites for successful adaptation in the community.

Deficits in social skills are assumed to reflect the combined influences of symptoms intruding on skills, inadequate learning history before onset of illness, lack of environmental stimulation, and loss of skills due to prolonged disuse.[46] Therefore, one technique that has become an essential component of psychiatric rehabilitation is social skills training,[23,47,48] a psychosocial intervention designed to meet the needs of socially dysfunctional consumers. It represents a structured application of behavioral learning principles aimed at helping consumers to build a repertoire of skills that improve their ability to function adequately in the community.

With the current ascendance of biological psychiatry, arguments have been made that people with schizophrenia cannot learn skills because of their brain disorder, as exemplified by abnormally large cerebral ventricles or a metabolically inactive prefrontal cortex. However, a large body of research literature[49-52] supports the effectiveness of structured forms of active-directive training for a wide range of behaviors and skills lacking in most individuals with a schizophrenic disorder. In active-directive teaching the trainer and the consumer participate in setting precise goals; this is followed by instructions, modeling with discriminative cuing, behavioral rehearsal with prompting and shaping, performance feedback, and generalization and maintenance of skills. A fuller description of these techniques is available.[46]

One concern raised about the value of skills training in this population is the durability and generalizability of the learned material. Although people with schizophrenia have serious cognitive problems in information processing and memory,[13] controlled studies[53,54] have demonstrated skill retention for at least a year after training. Two recent metaanalyses[55,56] of more than 35 studies of skills training with schizophrenic patients found significant effects on discharge rates from hospitals, relapse rates, durability and generalization of skills, and social adjustment.

Modules for teaching social and independent living skills

Unfortunately, techniques for teaching social skills are not easily learned. A training apprenticeship of at least 3–6 months is needed to prepare a psychologist, nurse, social worker, or psychiatrist to use these skill-training methods confidently and competently. To overcome this obstacle to widespread dissemination, a step-by-step program of teaching social and independent living skills was designed that could be more easily used by a wider array of mental health professionals and paraprofessionals.[57] Each module within this program comprises a trainer's manual with stepwise instructions, a patient's workbook with exercises and homework assignments, and a videocassette to be shown to the consumer, demonstrating the skills to be learned. Several modules are now available: *Medication Management*, including the use of depot neuroleptics; *Recreation for Leisure; Symptom Management; Job Finding; Basic Conversational Skills; Social Problem-Solving; Community Re-Entry; Street Smarts;* and *Grooming and Self-Care*. Together the modules

form a comprehensive rehabilitation program, but they can also be used selectively to fit the specific needs, interests, and resources of any program.

The techniques used to teach each module's constituent skills include all of the behavioral learning principles known to help people with schizophrenia overcome their learning disabilities: behavioral rehearsal, coaching, shaping and fading, modeling, and positive reinforcement. Each module is divided into separate skill areas with specific educational objectives.

The consumers proceed through each skill area by completing seven learning activities. The "introduction" highlights the values and advantages of the training, offsetting the lack of motivation frequently encountered in consumers with schizophrenia. This is followed by video "modeling" and "role playing," including focused directions, prompting, and coaching, with immediate positive feedback intended to compensate for cognitive disorganization and psychopathology. The next two learning activities, "resource management" and "outcome problem-solving," involve the repeated practice of exercises designed to help consumers extend their skills into a broader, more flexible problem-solving strategy. The goal of the next two activities, "in-vivo" and "homework assignments," is to generalize targeted skills into the consumers' natural social environments that differ from the training situation. Successful completion of each skill area's homework assignment represents the ultimate step in training, but "booster sessions" are available as needed to maintain skills.

The *Symptom Management* module consists of four skill areas: how to identify the warning signs of relapse, how to intervene early to prevent relapse once these signs appear, how to cope with the persistent symptoms that continue despite medications, and how to avoid alcohol and drugs of abuse. Each skill area can be further divided into target behaviors. In the "Warning Signs" skill area, consumers learn how to discuss warning signs with the doctor and their relatives so that there is agreement on the symptoms that predict relapse (e.g., insomnia, irritability, social withdrawal, ideas of reference). Consumers are also taught to keep a checklist of warning signs to monitor themselves over time. This is intended to help people understand the benefits of early intervention and realize when to request help.

These modules were designed to compensate for the cognitive and symptomatic difficulty with learning regularly experienced by many consumers with schizophrenia. In one controlled study[54] 80 consumers with schizophrenia who were receiving constant maintenance neuroleptic therapy were randomly assigned to supportive group therapy or to structured, modularized skills training. Consumers in group therapy engaged in an insight-oriented and supportive group process that included education about schizophrenia as an illness and the importance of medication but did not employ behavioral learning techniques. The skills training comprised training in medication and symptom self-management using the modules. Both treatment conditions involved twice-weekly, 90-minute sessions over the course of 6 months. After 6 months the consumers who received skills training had made significant gains in each of the areas taught, while those in group therapy had not. These skills were largely retained 1 year after training was completed. Although the data comparing groups for psychopathology were inconclusive, nearly all of the consumers who received skills training regularly monitored their warning signs throughout the 6-month training period, indicating an increase in the collaborative relationship with the prescribing clinician. Moreover, the consumers who received skills training showed improved social adjustment 2 years after they entered the study.[58]

Behavioral family management

Skills training provides a technology for galvanizing the consumer and the family or significant-other caregiver into becoming responsible consumers of mental health services, as well as active advocates for their own needs in the realm of community support services. Moreover, skills training can equip consumers and their caregivers with the capacity to cope with ambient biopsychosocial stressors (e.g., drugs of abuse, family stress and burden, major life events). These findings led to the development of training techniques and educational programs designed to teach consumers and their families about schizophrenia and its management.

Although several family psychoeducational programs have been developed,[59] the method that has evolved from behavioral-skills training is called behavioral family management.[60] In this treatment training occurs in five stages—behavioral assessment, education about schizophrenia and its care, communication skills training, problem-solving, and special problems—with considerable recycling of each stage throughout the therapy. The clinical efficacy of this model was systematically evaluated at the UCLA Clinical Research Center for Schizophrenia and Psychiatric Rehabilitation.

Consumers with schizophrenia discharged from psychiatric facilities to stressful home environments were randomly assigned to 9 months of either home-based behavioral family management or equally intensive individual therapy. After 9 months and at the 2-year follow-up, consumers who received the family treatment had had fewer hospitalizations and less time in the hospital, had experienced fewer major exacerbations in psychotic symptoms, and had required fewer emergency crisis sessions than consumers who received individual therapy. Consumers receiving the family intervention also improved more in their social and vocational adjustment and were prescribed (by psychiatrists blind to their treatment condition) lower doses of neurolep-

tics to control their symptoms than the consumers who received individual supportive therapy.[60]

Practical programs of skills development for family management of schizophrenia have been replicated with similar results in Pittsburgh,[61] New York City,[62] London,[63] and Manchester, England.[64] At the West Los Angeles Veterans Affairs Medical Center, behavioral family management was added to customary antipsychotic medication and clinic care. The family management group had a 5% rate of severe relapse after 1 year, while the customary care group had a 30% rate.[65]

Dissemination of skills training to practitioners

Controlled studies have tested for the replicability and efficacy of skills training for consumers with schizophrenia. One investigation[53] randomly assigned consumers at seven facilities (one state hospital, five residential care homes, and one day treatment program) to customary social rehabilitation therapy or to a modular program in which they received specific training on how to develop independent recreational activities, improve their grooming skills, and learn medication self-management. Consumers and trainers were evaluated on their ability to learn and teach these skills, respectively. Over 30–40 hours of training, the consumers receiving the skills training in any of the facilities acquired and retained significantly more than those getting the customary form of social rehabilitation. More germane to the question of disseminability, the effectiveness of the intervention depended on the trainers' adherence to the instructional techniques specified in the modules but not on their level of education or professional degree, demonstrating great utility in the hands of professional and nonprofessional trainers alike.

THE INTEGRATION AND TRAINING OF CASE MANAGERS AS BIOBEHAVIORAL REHABILITATION TECHNICIANS

A key factor that facilitated the transition from custodial care to independent community living was the implementation of case-management services.[24] That successful service-delivery models with a case-management framework have increased the community tenure of previously institutionalized consumers has been empirically validated and replicated in a variety of settings.[66,67] Case management, especially when provided by interdisciplinary teams, can be the vehicle for making efficacious biobehavioral treatments accessible to consumers with schizophrenia.[67]

Although case management has become the cornerstone of community treatment, there is little consensus on the role of the case manager.[68,69] However, a case manager in a biobehavioral rehabilitation setting has several specific tasks to perform. These include building relationships, acting as a consultation-liaison agent for getting the consumer's multiple needs met from various service organizations, conducting biobehavioral assessments, and undertaking timely clinical interventions.

The therapeutic alliance established with a consumer is the foundation of the case-management process. By ensuring continuity of care and being equipped with specific clinical competencies, case managers have influenced consumer outcomes toward improved vocational functioning, less social isolation, and more independent living.[70] The process of engagement involves developing collaborative relationships not only with consumers but also with families and other caregivers. These relationships enable case managers to enlist various sources of information and broaden the spectrum of treatment strategies.[68]

A second basic function of case managers is to link consumers to services that will meet their needs and fit their personal goals. As consultation-liaison agents, however, case managers must be aware of the resources available to consumers (e.g., food stamps, Social Security benefits) and must also consider the resources *of* the consumer.[71] Consumers may have specific wishes and needs that differ from the expectations of the case manager. As advocates, case managers have a responsibility to enter into an egalitarian, empirically driven, problem-solving relationship that not only coordinates care, but through the process of modeling can enhance consumers' capacities to cope and function.

Biobehavioral assessment and intervention is an ongoing process akin to the titration of medications based on an individual's changing needs. The Brief Psychiatric Rating Scale has been utilized by case managers as an indicator of impending psychotic relapse.[72] Case managers have learned to monitor side effects, depressive symptoms, prodromal signs, and compliance with medication in an effort to prevent, rather than resolve, crises.[68]

THE CONSUMER AS CASE MANAGER

Limitations of the Training in Community Living model

One case-management system that has effectively incorporated the principles of biobehavioral rehabilitation is the Training in Community Living model developed in Madison, Wisconsin, and adapted to several other locations throughout the world.[66,67] However, these programs have not been shown to improve the social adjustment and autonomy of mentally ill individuals.[73] Similarly, recipients of "aggressive" case management frequently become dependent on health care providers and hence may require perpetual assistance.[74] In contrast, the biobehavioral approach to treatment and rehabilitation offers opportunities to consumers who wish to be active participants in their own treatment.[75] To be a responsible consumer of maintenance

antipsychotic medication requires lengthy and repeated education about effectiveness, side effects, and self-administration of medication, as well as about the negotiation skills necessary for effective communication with a physician. The technology for training consumers to assume self-management of their mental illness is in its infancy, but already progress has been made that needs to be disseminated to and replicated by other practitioners.

Personal Effectiveness for Successful Living group

The Personal Effectiveness for Successful Living approach to equipping consumers with self-advocacy skills was started 25 years ago at the Oxnard (California) Community Mental Health Center and the West Los Angeles Veterans Administration Medical Center.[76] In this approach clinicians use advanced social skills training principles to teach consumers how to identify and resolve community-based situations, thereby making them somewhat more independent of the mental health system and in effect allowing them to act as their own case managers. The foundation of this modality is the use of a problem-solving approach.[46] People with schizophrenia have been able to learn this method and subsequently to apply it competently to meet life difficulties.[77,78] A case vignette may illustrate this process.

Mr. H. is a 27-year-old, single, unemployed male, who lives at home with his widowed mother. He was first diagnosed with schizophrenia at age 18. He had been on numerous medications, with intermittent compliance, and continued to hear voices and harbor paranoid ideation, which greatly limited his ability to socialize. His most distressing symptom was the sense that his breath could influence and even endanger other people, so much so that he would go to great lengths to avoid contact with others. Mr. H.'s desire to be rid of this symptom provided the "hook" that the therapist needed to involve him in treatment. The mutually-agreed-upon goal of therapy became to ameliorate or at least cope with his "breathing problem."

When Mr. H. began the UCLA Social and Independent Living Skills Program, he was actively psychotic and was smoking marijuana regularly. He maintained that the marijuana helped him to get out of the house by reducing his anxiety. Unfortunately, the marijuana also exacerbated his symptoms and increased his sedation and lethargy. He was assigned to the *Medication* and *Symptom* modules on a twice-weekly basis. In these active-directive teaching groups he learned the importance of continuous medication regimens, how to negotiate medication issues with his psychiatrist, how to identify the warning signs of relapse, how to intervene early to prevent relapse once these signs appeared, how to cope with persistent psychotic symptoms that continued despite medication, and how to avoid alcohol and drugs, which exacerbated the symptoms of his illness. This last point surprised Mr. H.: he thought that alcohol and marijuana helped him.

Through the use of training strategies targeted to various sensory modalities (e.g., videotaped demonstrations, written instructions, verbal prompting, role-play simulations), Mr. H. was able to overcome many of the cognitive deficits characteristic of schizophrenia. Over the course of the Social and Independent Living Skills Program, he became a responsible consumer of antipsychotic medication and even stopped using illicit drugs and alcohol. His symptoms persisted, albeit at a reduced level. At this point, Mr. H. made an effort to engage his mother in behavioral family management because he believed that she could benefit from learning problem-solving strategies such as those he had learned in the group. Mrs. H. declined to participate in the formal treatment, but at her son's request, she did sit in on a few of his sessions with his psychiatrist to learn more about schizophrenia.

Soon thereafter, Mr. H. decided to enroll in the Personal Effectiveness for Successful Living group to maintain and build on the skills that he had learned over the 6 months of the program. A group member told Mr. H. about his own experiences with clozapine, including how it had reduced his symptoms while producing fewer side effects than other medications. Mr. H. spent several weeks in the group rehearsing the conversation he was to have with his psychiatrist about clozapine. When the conversation actually took place, his psychiatrist explained the possible adverse effects of clozapine and the need for weekly blood monitoring and then agreed to start the medication.

As his psychiatrist increased the dose of clozapine, Mr. H. monitored his symptoms using the Self-Assessment Rating Sheet derived from the modules. Mr. H. was soon able to notice a drop in the intensity and frequency of his symptoms. This new-found confidence encouraged him to seek out a volunteer job at a nonprofit agency delivering hot meals to the elderly. Once again, the phone call to get the interview, the interview itself, and his first day on the job were all practiced in the safe environment of the skills-training group, with other group members portraying telephone operators, interviewers, and fellow employees. Within a few months of being hired, he was assigned his own route and became a paid driver for the company. Soon thereafter, he was promoted to supervisor of his shift. At this writing, Mr. H. is responsible for the delivery of 1000 meals a day and oversees six routes and ten employees. He continues to attend the group because he finds it a good forum for learning strategies to build interpersonal relationships and solve stressful problems and challenges.

"Prosumer" case managers

More recently, mental health consumers who have learned to cope effectively with symptoms have been trained and utilized as case-management aides.[79] This relationship has benefited both the recipient of aides' services and the aides, who could be called "prosumers" (i.e., those who both perform and consume mental health services). The number of programs that are not only "client-driven" but "client-

run" has expanded dramatically over the last few years.[80] Many consumer-run programs have shifted from the clubhouse model or drop-in center approach to taking on more advocacy, direct clinical service, and case-management roles.[81] These programs are striving to accomplish, on a system-wide basis, the goals of biobehavioral treatment: the creation of a partnership between clinicians and the mentally ill.

CONCLUSIONS

The gap between empirical research and clinical practice in the treatment and rehabilitation of persons with schizophrenia is finally being bridged by well-validated biobehavioral interventions. These include the teaching and mentoring of consumers to be informed and responsible partners in the treatment and rehabilitation process. No longer passive receptacles of services, consumers are now taking an active role in determining their goals, selecting their treatments, and learning as much as possible to control and manage their illnesses.

This paradigm shift in psychiatric practice is accompanied by the long-overdue withdrawal from theoretical models of human behavior based on intrapsychic mechanisms, hypothetical structures and energies, and unobservable and unmeasurable explanatory processes. Progress is occurring, therefore, both in theory and in practice as practitioners are able to use tools of proven efficacy. For more than a century the boundaries of theoretical models in understanding schizophrenia have been limited only by the imaginations of those constructing them. As the twentieth century draws to a close, adherents of untested clinical theories and practices are being successfully challenged by the effectiveness of biobehavioral treatment methods that are delivered to well-educated consumers in community-based systems of care.

Modalities of biobehavioral treatment such as social skills training, cognitive remediation, behavioral family management and psychoeducation, pharmacotherapy, and assertive case management are increasingly targeted to specific treatment goals and linked to an individual's phase of the disorder to achieve maximum impact. Well-designed research comparing the efficacy of biobehavioral treatment with that of alternative rehabilitation approaches remains to be done. This next step will help to identify the psychosocial treatments of choice for schizophrenia and other serious mental disorders. Increasingly, such treatments will be integrated with new antipsychotic drug strategies to make recovery a real possibility for many more consumers than ever before.[15,21,82]

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