Durability of the Efficacy of Integrated Care in Schizophrenia: A Five-Year Randomized Controlled Study

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Objective: **The aim of the study was to evaluate the durability of efficacy of the Integrated Care (IC) program in a Swedish context. The IC program is a person-centered flexible assertive community treatment approach delivered through a novel mechanism: a resource group clinical microsystem for each patient.** ***Methods:*** **All patients with schizophrenia in a Gothenburg urban-sector catchment area were randomly assigned to either the IC or the Rational Rehabilitation (RR) programs. Sixty-six patients were interviewed and assessed by independent interviewers before treatment, after treatment (24 months), and at follow-up (five years). Analysis was by intention to treat.** ***Results:*** **At the five-year follow-up, significant improvements were noted in social functioning and consumer satisfaction in the IC group (N=35) compared with the RR group (N=31). No patients were lost to services in either program.** ***Conclusions:*** **The major finding was the durability of efficacy of the IC program. (*Psychiatric Services* 65:1054–1057, 2014; doi: 10.1176/appi.ps.201300164)**

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Meta-analyses have concluded and guidelines recommend that most persons with schizophrenia should be treated by coordinated interventions provided by an assertive community treatment (ACT) service delivery model that includes clinical case management (1–3). A robust approach to implement such a model in clinical practice is needed. The Integrated Care (IC) program is an integrated health technology approach to the systematic coordination of general and behavioral health care. Previously we reported two-year outcomes of a randomized controlled trial of treatment for schizophrenic disorders (4) that compared IC with the Rational Rehabilitation (RR) program, a best-practice program. At two years, the IC group had significantly better social functioning and satisfaction with services, compared with the RR group (5).

The aim of this study was to evaluate the durability of efficacy of the IC program at a five-year follow-up.

Methods

The study was a randomized controlled trial that compared the IC and RR programs. The study was approved by the ethics committee at the University of Gothenburg covering the western Swedish region Vastra Gotaland. All inpatients, outpatients, and clients receiving social services who had a severe mental illness and who were living in the catchment area, a central-urban sector of about 100,000 inhabitants, were referred to the study and assessed for eligibility. Eighty-four patients met the following criteria: age 18–45 years; *DSM-IV* diagnosis of schizophrenia confirmed by the Structured Clinical Interview for DSM-IV, a substance use disorder not identified as the primary disorder, and completion of written informed consent. Allocation of patients by random numbers to usual-practice community mental health teams (that is, not research teams) providing either the IC program (N=51) or the RR program (N=33) was carried out independently by a third party (4). One patient died, and another patient moved to another town. Both were from the control group. Because of administrative health and social welfare structural changes related to the register of addresses of the patients and beyond the control of the researchers, 16 patients in the IC group had to be discharged from the IC program during the third year of the trial. The trial was carried out from 1994 to 2005.

The IC and RR programs were similar in most characteristics, program elements, and general context. [More information about the programs is presented in an online data supplement to this report.] IC and RR were provided by either of two similar multidisciplinary community mental health teams specific for patients with psychotic disorders. The teams were in outpatient clinics at separate locations. Both were part of the outpatient services of a university hospital. Service delivery was by clinical case management and assertive outreach. The IC program incorporated key features of flexible ACT (6), such as providing services on either intensive clinical case management or team care levels. Both the IC and RR programs

implement an integrated combination of individualized medication, psychoeducation, multiple family groups not involving the patient, living skills training, person-centered psychological interventions, and crisis interventions.

A major difference involved clinical decision-making management. The RR program applied clinical decision making as usual, which involved a psychiatrist, a case manager, the client, and informal caregivers. In the IC program shared decision making was carried out by a clinical microsystems approach (7) within a resource group (8) for the individual client. A clinical microsystem is defined as a small group of people (including health professionals, patient, and family) who work together in a defined setting on a regular basis (or as needed) to create care for discrete subpopulations of patients. As a functioning unit it has clinical and business aims, linked processes, and a shared information and technology environment and produces care and services that can be measured as performance outcomes. The clinical microsystem evolves over time and is often embedded in larger systems or organizations. The resource groups of the IC program provide care for patients with severe mental illness. The group meets quarterly for about two years. The shared decision making procedures are supported by psychoeducation about illness management and workbook sheets for analysis, systematic problem solving, communication, and planning. Only IC was managed by a workbook manual shared by service users and professionals. In contrast to our previous two-year follow-up study (4), in this study we placed more emphasis on the Global Assessment of Functioning (GAF) because new evidence suggests the value of GAF as an outcome indicator (9,10). The GAF outcome measures were the DSM-IV split-GAF disability and split-GAF symptoms rating scales (possible scores range from 0 to 100, with higher scores indicating superior functioning and fewer symptoms and signs, respectively).

The UKU ConSat rating scale is a brief, eight-item, rating scale for an interviewer assessment of satisfaction with care and service delivery (11). It consists of six items related to care structure, process, and relationship with professional frontline workers and two items concerned with outcome and well-being. Possible scores range from –24 to +24, with higher scores indicating greater satisfaction with services.

We obtained information on numbers of patients engaged and retained in services. Number of days hospitalized and number of rehospitalizations because of psychotic relapse were used as indicators of severe functional deterioration. Assessments were made by eight independent assessors who were trained to a level of high interrater reliability, not involved in treatment, and formally blind to the programs carried out (that is, they were not informed about treatment allocation). All patients were interviewed at baseline, quarterly for two years (4), and at the five-year follow-up.

We used t tests to analyze measures, sociodemographic characteristics, and differences between groups. All tests were two-tailed, and the significance level was set at $\leq .05$. Effect sizes were calculated by the Cohen's d formula. The statistical software package used was SPSS, version 10.0.

Results

The IC group of 35 patients and the RR group of 31 patients were similar in regard to gender, mean age at the start of study (IC group, 37.2±9.0; RR group, 39.4±8.8 years), race-ethnicity (IC group: Caucasian, N=34; Asian, N=1; RR group: Caucasian, N=30; Asian, N=1), marital status, duration of illness, and GAF and consumer satisfaction ratings at the start of the study. The only significant differences between the groups were a somewhat longer duration of illness in the RR group (IC, 10.2±7.6 years; RR, 14.6± 8.5 years) and a higher female-to-male ratio in the RR group (IC, 10:25; RR, 15:16). The 16 patients who were discharged from the IC program for administrative reasons had a female-to-male ratio of 7:9, a mean age of 41.0±7.8 years, and an illness duration of 16.0±7.0 years. For this group, the GAF disability score at the start of the trial was 46, the GAF symptom score was 46, and UKU ConSat score was 5.

Results of the three assessments (before treatment, posttreatment, and follow-up) are summarized in Table 1. Compared with the RR group, there were significant improvements in functioning for the IC group from baseline to two and five years in the primary outcome measure, the GAF disability scale. At the five-year follow-up, significantly increased satisfaction was found for the IC group, as assessed by the UKU ConSat scale. For the impairment indicator measure, GAF symptoms, a significant difference was noted in the change in scores between the IC and the RR groups (effect size=.69). The difference was attributable to the lower ratings in the RR group at the five-year follow-up.

The mean total number of days hospitalized at the five-year follow-up was 48±95.5 for the IC group and 132±364.4 for the RR group. The difference was not significant. The rate of yearly psychotic relapses during the five-year period was about 20% among participants in both programs. There were no suicides and no dropouts in either group. Program fidelity of the IC program (12) was high as assessed annually by an external reviewer.

Discussion

The five-year findings for primary outcomes were improved social functioning and satisfaction with care for the IC group. These results are in accord with findings of a recent meta-analysis (13). Durability of the two-year outcomes was also demonstrated.

In our study, the GAF symptom load was stable in the IC group. This finding is similar to outcomes measured by the Positive and Negative Syndrome Scale in an observational five-year trial that involved 225 patients with schizophrenia and related disorders who were receiving antipsychotic treatment (14). Both that study and our study included many "poor prognosis" participants. The authors concluded that the decision-making process may benefit from more active patient involvement by using structured clinician and patient rating scales for monitoring treatment. Such shared decision making may improve compliance and may help explain the difference in changes on the GAF symptom scale between the IC and RR groups. The symptom load outcome for participants in the RR program may reflect a traditional medical model in which the clinician uses

Table 1

Measures at three time points for participants in the Integrated Care (IC) program (N=35) and the Rational Rehabilitation (RR) control group (N=31)[a]

	Before treatment					24 months							5 years						
	IC		RR			IC			RR				IC			RR			
Measure	M	SD	M	SD	p	M	SD	ES	M	SD	ES	p	M	SD	ES	M	SD	ES	p
Split-GAF disability[b]	48.8	8.0	49.9	12.5	.568	58.2	8.0	1.17	49.5	11.4	-.03	.001	56.4	11.1	.79	47.5	11.6	–.19	.002
UKU ConSat[c]	7.4	7.1	6.4	7.7	.557	12.3	6.1	.74	6.9	10.3	.06	.011	12.9	6.3	.82	3.5	8.6	–.36	<.001
Split-GAF symptoms[b]	55.4	14.2	55.8	18.6	.932	51.0	9.8	–.36	48.7	13.8	–.43	.056	56.3	12.6	.07	47.9	11.8	–.51	.007

[a] Means were compared by t tests. Effect sizes (ES) were calculated by Cohen's d.

[b] Possible scores on the Global Assessment of Functioning range from 0 to 100, with higher scores indicating superior function or less severe symptoms and signs.

[c] Possible scores range from –24 to +24, with higher scores indicating greater satisfaction with services.

his or her knowledge to determine the best possible treatment for the patient, providing selected information to obtain the patient's agreement. The IC program can be viewed as a template for patient involvement and shared decision making.

The use of separate GAF assessments as the only measures of functioning and symptoms introduced a risk of imprecision. We decided to use GAF because new evidence suggests the validity of separate function and symptom GAF measures as indicators on the group level. This has been confirmed by discriminating and concurrent associations to other relevant clinical measures (9,10). Furthermore, we carried out a study using data from this trial. We used the total scores of the 24-item Brief Psychiatric Rating Scale and the GAF symptom ratings. The correlation coefficient (Spearman rho) was .77. This finding was based on 640 assessments of 84 patients by seven trained interviewers over two years.

The IC technology is a person-centered integrative approach provided by multidisciplinary community mental health teams through a novel mechanism—a resource group clinical microsystem for each patient. The resource group teamwork involves the patient and selected social network resource persons as well as professionals. The IC program emphasizes clients as the agents of change and case managers and psychiatrists as medical professionals promoting the advancement of psychiatry and related sciences. The group is more than a team; it is also a system for information sharing (7) and decision making.

The content of the IC program was analyzed in a qualitative study (15). Five overarching themes were identified: the IC program, the resource group, empowerment of the client, progress in treatment, and the case manager. The IC person-centered approach comprises treatment and illness management and promotes personal recovery. Some original ACT key ingredients have been further developed in the IC program: engagement mechanisms by shared decision-making procedures, the support system, and 24-hour availability. These ingredients were included in clinical management by the resource group. Furthermore, the role of the consumer has become defined as being a knowledge-empowered collaborative partner to professional caregivers.

No patients were lost to services in either program. We believe that this reflects the fact that both programs, but in particular the IC program, promoted long-lasting personal relationships between professionals and service users and that patients were fairly satisfied with services.

The resource group can be viewed as a generic key element that can change thinking about the long-term controversy of individual working alliances, contrary to the shared responsibility of a classical ACT team (2). In fact, the ability to act flexibly either at the level of individual clinical case management or at the level of team care is entirely compatible with the flexible version of the ACT model (6).

A major strength of this study was the comparison of programs that could retain and engage patients. This also made it possible to assess all patients at the five-year follow-up. The manualized IC program facilitated understanding of differences between the programs. The fact that both programs were provided by usual-practice teams, not research teams, represented a further strength. One limitation was certainly the rather small number of patients, which did not permit comparison of subgroups. Another limitation was that the global GAF scales did not permit more detailed analyses. On the other hand, use of the GAF scales for the accountability of effects in the real clinical world was supported. Future studies should focus on the elements and ingredients of effective programs and the use of patient-reported outcomes.

Conclusions

The major findings were significantly improved social functioning and increased satisfaction with services for patients in the IC program. In addition, no patients were lost to services, and the durability of the two-year outcomes was demonstrated. The essential difference between the two programs was the IC program's clinical microsystem resource groups. The major clinical implication is that a resource group can be added to any ACT service delivery model.

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