The Cost of High-Fidelity Supported Employment Programs for People With Severe Mental Illness

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Objective: This study determined the costs of evidence-based supported employment programs in real-world settings. Methods: A convenience sample of 12 supported employment programs known to follow closely the principles of evidence-based supported employment was asked to provide detailed information on program costs, use, and staffing. Program fidelity was assessed by using the Supported Employment Fidelity Scale. Cost and utilization data were analyzed in a comparable manner to yield direct and total costs per client served, per full-year-equivalent client, and per employment specialist. Results: Usable data were obtained from seven programs in rural and urban locations in seven states: Indiana, Kansas, Massachusetts, New Hampshire, Oregon, Rhode Island, and Vermont. All programs received high fidelity ratings, ranging from 70 to the maximum value of 75. Annual direct costs per client served varied from $860 in New Hampshire to $2,723 in Oregon, and direct costs per full-year-equivalent client varied from $1,423 in Massachusetts to $6,793 in Indiana. Direct costs per employment specialist did not show as much variation, ranging from $37,339 in Rhode Island to $49,603 in Massachusetts, with a mean of $44,082. Differences in cost per client arose in part from differences in rules for determining who is or is not considered to be on a program’s caseload. By assuming a typical caseload of about 18 clients, it was estimated that the cost per full-year-equivalent client averaged $2,449 per year, ranging from $2,074 to $2,756. Conclusions: The results point to the need for greater uniformity in caseload measurement and help specify the costs of high-fidelity supported employment programs in real-world settings. (Psychiatric Services 55:401–406, 2004)
grams are supported employment programs replace existing programs that only if supported employment per person (per year)” (30). Previous surveys have found even lower rates of access (25–27).

Several factors account for the sparse implementation of supported employment programs: the rigid funding rules of the vocational rehabilitation system, lack of coverage by Medicaid, lack of leadership by program administrators, resistance to change of clinicians and supervisors, and inadequately informed clients and relatives (2). Funding for these programs is likely to be insufficient, partly because of the perception that supported employment services are too expensive.

Relatively little is known about the costs of supported employment programs, particularly of high-fidelity programs in real-world settings. To date only two economic analyses have reported costs for supported employment programs. In an early study, two day treatment programs that were converted into supported employment programs had yearly per client costs of $1,760 and $1,880 after the conversion (28). In a subsequent study of clients who were randomly assigned to groups, the supported employment program had an annual cost of $3,800 per client (29).

However, cost estimates from research demonstrations such as these are influenced by many factors that do not apply in real-world settings: newly hired staff, unusually careful training and supervision, clients who cannot be rejected or dropped, the influence of research funding on wages, and so on. Reflecting the uncertainty about the costs of supported employment services, the Substance Abuse and Mental Health Services Administration recently estimated that the “direct cost of vocational services was $2,000 to $8,000 per person [per year]” (30).

Moreover, economic analyses suggest that only if supported employment programs replace existing programs are supported employment programs likely to be cost-neutral or cost-saving (31,32). Clearly, this replacement will not be possible in all settings. Thus little is now known about how much supported employment programs are likely to cost in real-world settings. In particular, the costs of programs that have achieved high fidelity to the supported employment model are likely to be of interest to program planners. The purpose of this exploratory survey was to gain some indication of these costs.

Methods
Identification of programs
Our strategy was to identify a sample of high-fidelity programs from various U.S. regions that operated in real-world settings. Thus little is now known about how much supported employment, access to such programs remains limited.

Despite strong empirical evidence of the effectiveness of supported employment, statements of expenditures for fiscal year 2001; and utilization data, dates that individuals began and ended any supported employment services during that time. Fidelity was rated by means of an interview with the program director, which was conducted by one of the authors: DB, GB, or RD, depending on the program. Statements of expenditures, with clarifications as needed, were obtained from the program’s financial officer, or in one case from the agency director. Program supervisors or information systems personnel provided utilization data and aided in their interpretation.

Analysis of expenditures
Data on program expenditures were reviewed by an economist (EL) and an experienced program business officer (PB). We attempted to make expenditure amounts comparable across sites. Costs were reclassified as either direct or indirect—that is, overhead—in as uniform a manner as possible. Also, for comparability, occupancy costs were imputed on the basis of the number of square feet occupied by supported employment staff and median office rental costs in the state (34). Overhead costs were allocated in proportion to the direct costs of each program. Costs provided for two sites—Indiana and New Hampshire—were for fiscal year 2002 and were deflated to 2001 dollars by using the June-to-June Consumer Price Index. (Details on the adjustment methods are available from the authors.)

Analysis of utilization data
Start and end dates were used to calculate the number of clients who received any services as well as the number of full-year-equivalent clients. The number of full-year-equivalent clients was calculated analogously to the number of full-time equivalent personnel in a program and is equivalent to the average caseload size during the year.

Results
We were able to obtain useable information from seven of the 12 pro-
grams that we contacted: four programs located in New England—Vermont, New Hampshire, Massachusetts, and Rhode Island—and three others located in the Midwest and the West—Indiana, Kansas, and Oregon. We were unsuccessful in obtaining usable information from five programs located in additional states. Data on client participation in a Denver, Colorado, program were not recorded in a manner that allowed for computation of the number of clients served. The other programs—two in New Jersey, one in Washington State, and one in South Carolina—either did not respond to repeated requests for data or did not provide sufficient data.

All programs included in our study are in urban areas except for two—the Oregon and Vermont programs. Three programs serve counties with significant black and Hispanic populations.

### Table 1
Costs of seven supported employment programs in fiscal year 2001 dollars

<table>
<thead>
<tr>
<th></th>
<th>Indiana</th>
<th>Kansas</th>
<th>Massachusetts</th>
<th>New Hampshire</th>
<th>Oregon</th>
<th>Rhode Island</th>
<th>Vermont</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Payroll</td>
<td>199,003</td>
<td>265,775</td>
<td>214,021</td>
<td>339,526</td>
<td>133,719</td>
<td>255,586</td>
<td>95,625</td>
<td>214,722</td>
</tr>
<tr>
<td>Transportation</td>
<td>8,171</td>
<td>12,382</td>
<td>7,901</td>
<td>11,661</td>
<td>132</td>
<td>141,461</td>
<td>955</td>
<td>2,775</td>
</tr>
<tr>
<td>Staff development</td>
<td>2,521</td>
<td>1,542</td>
<td>7,273</td>
<td>6,109</td>
<td>1,362</td>
<td>1,461</td>
<td>388</td>
<td>2,275</td>
</tr>
<tr>
<td>Program supplies</td>
<td>2,012</td>
<td>4,280</td>
<td>6,608</td>
<td>10,343</td>
<td>1,582</td>
<td>985</td>
<td>502</td>
<td>3,560</td>
</tr>
<tr>
<td>Other operating costs</td>
<td>11,292</td>
<td>3,957</td>
<td>7,985</td>
<td>8,809</td>
<td>2,967</td>
<td>3,757</td>
<td>9,124</td>
<td>6,713</td>
</tr>
<tr>
<td><strong>Total direct costs</strong></td>
<td>234,351</td>
<td>301,875</td>
<td>248,013</td>
<td>409,443</td>
<td>147,039</td>
<td>298,709</td>
<td>119,471</td>
<td>251,272</td>
</tr>
<tr>
<td><strong>Overhead costs</strong></td>
<td>55,145</td>
<td>162,708</td>
<td>31,254</td>
<td>63,111</td>
<td>51,542</td>
<td>85,921</td>
<td>12,590</td>
<td>66,039</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td>289,496</td>
<td>464,583</td>
<td>279,267</td>
<td>472,554</td>
<td>198,581</td>
<td>384,630</td>
<td>132,061</td>
<td>317,310</td>
</tr>
</tbody>
</table>

|                      |         |        |               |               |        |              |         |      |
| **Overhead cost as a percentage of direct cost** | 23.5   | 53.9  | 12.6          | 15.4          | 35.1  | 28.8         | 10.5    | 26.3 |

|                      |         |        |               |               |        |              |         |      |
| **Number of supervisory personnel** | .4     | .5    | 1             | 1             | .3    | 1            | 1       | .7   |
| **Number of employment specialists** | 5      | 8     | 5c            | 9             | 3     | 2.5b         | 3       | 6    |
| **Number of clients served** | 107    | 198b  | 265           | 476           | 54    | 161          | 89      | 193  |
| **Number of full-year-equivalent clients** | 34.5   | 92.3  | 174.3         | 267.9         | 36.8  | 112.4        | 48.0    | 109.5|
| **Ratio of clients served to full-year-equivalent clients** | 3.1    | 2.1   | 1.5           | 1.8           | 1.5   | 1.4          | 1.9     | 1.8  |

|                      |         |        |               |               |        |              |         |      |
| **Number of full-year-equivalent clients per employment specialist** | 6.9    | 12.3  | 34.9          | 29.8          | 12.3  | 14.1         | 19.2    | 19.2 |
| **Direct cost per client served** | 2,190  | 1,525 | 936           | 860           | 2,723 | 1,855        | 1,342   | 1,302|
| **Direct cost per full-year-equivalent client** | 6,793  | 3,272 | 1,423        | 1,528         | 4,001 | 2,658        | 2,489   | 2,959|
| **Direct cost per employment specialist** | 46,870 | 40,250| 49,603       | 45,494        | 49,013| 37,339       | 47,788  | 44,082|
| **Total cost per client served** | 2,706  | 2,346 | 1,054        | 993           | 3,677 | 2,359        | 1,485   | 1,644|
| **Total cost per full-year-equivalent client** | 8,391  | 5,036 | 1,602        | 1,764         | 5,403 | 3,422        | 2,751   | 2,898|
| **Total cost per employment specialist** | 57,899 | 61,944| 55,853       | 52,506        | 66,194| 48,079       | 52,824  | 55,668|

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*Employment specialists at this site spend between 1 and 20 percent of their time performing case management activities, so the actual cost of supported employment services may be somewhat overstated.

b All ratios in this column are computed from the relevant means in the column, not as the average of the ratios in the row.

c Expenditures on staff development at the Oregon site were $1,581, not counting an additional $17,546 worth of consulting services. Most expenditures were financed out of the Substance Abuse and Mental Health Services Administration systems change grant and would not have occurred, according to site personnel, in the absence of that grant. The figure reported here reflects site personnel's assessment of the amount that was not funded by the grant.

d Variation in occupancy costs is largely because of variation in the number of square feet allocated to supported employment programs at the different sites. Median cost of a square foot ranged from $11.50 in Indiana to $18.25 in Massachusetts, with a mean of $13.86 and a median of $13.40.

e Overhead expenses reported for the Kansas site, which is a community mental health center, include a share of its assessment by the county government.

f We report here the number of funded positions without taking into account periods during which the program may have been short-staffed (in other words, the number of positions with full staffing).

g The positions, other than one coordinator, consisted of three employment specialists and two job coaches.

h Staffing increased from two to three employment specialists during the year.

i Of 198 clients served, 171 had severe mental illness and the remainder had other types of disabilities. Unlike in the Indiana program, in which different employment specialists serve different populations, no reasonably reliable method was available to isolate costs for clients with severe mental illness only. Costs may thus be somewhat biased, upwards or downwards, because of the inclusion of clients who did not have severe mental illness in the calculations.

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lations—the Massachusetts and Indiana programs serve a population that is more than 20 percent black and Hispanic population combined, and the Rhode Island program serves one that is more than 15 percent black and Hispanic combined, whereas the other four programs have small or insignificant minority populations.

The seven programs included in the study received fidelity ratings that ranged from 70 to 75, with a mean of 72.7. Thus all programs had similar fidelity ratings, at or near the maximum value of 75. Ratings from 66 to 75 are considered to reflect good implementation. All programs had been in existence for at least one year in fiscal year 2001.

Cost data obtained from the seven programs are shown in Table 1. Total direct costs varied more than threefold, from $119,471 at the Vermont site to $409,443 at the New Hampshire site. The Vermont site served only 89 clients, compared with 476 clients at the New Hampshire site.

In this small sample of programs we found a more than threefold variation in direct cost per client served—from $860 in New Hampshire to $2,723 in Oregon—and an almost five-fold variation in direct cost per full-year-equivalent client—from $1,423 in Massachusetts to $6,793 in Indiana. The variation in cost per client turnover rate amplified the variation in cost per client served, which made the variation in cost per full-year-equivalent client larger than the variation in cost per client served.

Direct costs per employment specialist are the most uniform measure of cost, ranging from $37,339 in Rhode Island to $49,603 in Massachusetts, with a mean of $44,082 and a median of $46,870. Total costs per employment specialist varied more than direct costs, because of the variation in overhead rates across sites.

Table 1 also presents the ratio of full-year-equivalent clients to employment specialists. These ratios exhibit a wide range, from 6.9 in Indiana to 34.9 in Massachusetts.

Discussion and conclusions

Variability in cost per client served and cost per full-year-equivalent client was larger than we anticipated. Variability in cost per client served can be attributed in part to variability in the rate of client turnover: a higher rate of turnover, evidenced by a larger ratio of clients served to full-year-equivalent clients, increases the number of clients who can receive services at some point during the year and thus reduces the cost per client served. Even in this small sample of high-fidelity programs, we found more than a twofold variation in turnover rates.

The Indiana site reported by far the shortest service episodes—103 days, compared with 173 to 254 days for the other sites—and had the highest percentage of clients who reported two episodes (16 percent, or 17 of 107 clients). Only two other sites reported clients having two episodes: seven of 265 clients (3 percent) at the Massachusetts site and four of 161 clients (2 percent) at the Rhode Island site. According to the program supervisor in Indiana, supported employment clients tend to make a quick transition to the treatment teams from which they are simultaneously receiving services. One reason for this rapid transition is that a record of quick successful closures encourages additional referrals from the vocational rehabilitation system.

The effects on outcomes of a policy of rapid closures are unclear. In practice, employment specialists typically work more closely with some clients than others at any given time: some clients may be working and need minimal support, which can be given by a case manager, other clients may go through periods during which they appear less interested in seeking work. In both cases, clients either can officially be kept on an employment specialist’s caseload or their case can be considered closed, possibly on a temporary basis, without this closure having a material impact on the client. If the employment specialist remains part of the client’s clinical team, as is the case at the Indiana site, so that a client can quickly resume employment services when needed, the principle of time-unlimited services is maintained. This variation in case closure practice across sites may help explain the large variation in direct cost per full-year-equivalent client across sites. Programs with lower numbers of full-year-equivalent clients may be counting as clients only individuals with whom they are working actively at any given time.

Costs per employment specialist, in contrast, were relatively uniform from site to site. Indeed, this relative uniformity in cost per employment specialist can be used to infer what a supported employment program is likely to cost. In the Supported Employment Fidelity Scale, the caseload per employment specialist can reach 25 before fidelity is compromised. However, the average caseload in our sample was 19, and a previous survey of 32 supported employment programs that were based in community mental health centers found an employment specialist’s caseload to average 16 (35). If we then assume a typical caseload of 18 and combine this caseload with the average cost per employment specialist of $44,082, we obtain a cost of $2,449 per full-year-equivalent client per year, with a range from $2,074 to $2,756, on the basis of the range of costs per employment specialist.

As for the cost per client served, programs in our sample had on average 1.8 times as many clients served as full-year-equivalent clients. Thus the average annual cost per client served, still assuming a ratio of 18 full-year-equivalent clients per employment specialist, becomes $1,361, ranging from $1,152 to $1,539.

Overhead increases all these costs by about 15 to 30 percent. Although the introduction of a supported employment program into the programming of a community mental health center or rehabilitation agency would not actually increase the organization’s costs by that entire amount, some billing and clerical costs that are classified here as overhead would increase directly with the volume of clients.

Study limitations

This study has several limitations. First, the small convenience sample may not be representative. Second, some of the variation in costs that we report certainly results from differences in accounting practices across sites, despite our attempts to adjust
with severe mental illness, and the efficacy of supported employment is now well-documented. In view also of the costs of second-generation antipsychotic medications and of other routinely provided services, the costs of supported employment seem surprisingly modest.

Finally, studies such as this one may be helpful in estimating the cost of other evidence-based practices, such as assertive community treatment or integrated treatment for dual disorders. As noted earlier, costs derived from research demonstrations tend to overstate the costs of real-world programs. Costs derived from an unselected sample of real-world programs, in contrast, tend to underestimate the costs of high-fidelity programs, because higher fidelity usually comes at a price. Assessing costs in mature, high-fidelity, real-world programs should be of considerable help to mental health program planners.

Implications
The findings of this study have at least three practical implications. First, greater uniformity in the measurement of caseload size is desirable. Caseload size is an important component of supported employment program fidelity. To promote continuity of care and flexibility in service delivery, clients should be counted on a caseload for a longer time rather than a shorter time. Funders could provide incentives that encourage inclusion in the caseload for a reasonable amount of time rather than rapid closure.

Second, the cost estimates generated from this survey may be of use both to service providers who are contemplating the development of supported employment services and to state governments or other insurers who are seeking to set appropriate reimbursement levels for supported employment services. Vocational rehabilitation occupies a place of central importance in the life of persons for such differences. Yet another limitation lies in our not taking into account the interrelation between supported employment services and the costs of case management services. At the Indiana site, for example, employment specialists spent a small part of their time providing case management services; therefore, the costs of supported employment services at that site may be somewhat overstated. Fourth, we have not attempted to evaluate the outcomes achieved by these different programs.

Finally, this study did not attempt to provide comparative information on the costs of alternative types of vocational rehabilitation programs. Information on costs of alternative programs for persons with mental illness is limited (36). An important cost advantage of supported employment services is that they quickly adjust to clients’ evolving needs and interests, whereas the costs of day treatment and sheltered programs are less easily adjusted. The evidence to date, although not yet conclusive, suggests that supported employment is more cost-effective than alternative programs in terms of outcomes of regular employment and community integration (36).

An important cost advantage of supported employment services is that they quickly adjust to clients’ evolving needs and interests.

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References


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