Early intervention in psychosis service and psychiatric admissions

AIMS AND METHOD
To investigate the effects of a standard National Health Service early intervention in psychosis service on bed days and engagement with services. We conducted a naturalistic before-and-after study comparing outcomes of individuals who received treatment from the service (n=75) with outcomes of individuals who presented to mental health services before the early intervention service was established and received treatment as usual (n=114).

RESULTS
People treated by the early intervention in psychosis service had significantly fewer admissions (P<0.001), readmissions (P<0.001), total bed days (P<0.01) and better engagement with services (P<0.05).

CLINICAL IMPLICATIONS
An early intervention in psychosis service compliant with current British mental health policy led to reduced use of psychiatric bed days confirming recent findings elsewhere. This leads to major financial savings, easily justifying the initial cost of investment in the service.

Method
Participants
In September 2002, an early intervention in psychosis team was established in Northumberland. The service aimed to take on all individuals with first-episode psychosis in the county. Participants were service users under 36 years of age who presented between October 1998 and September 2005. The first group (n=114) were individuals who presented between October 1998 and September 2002 (i.e. before the service had been established), but who would have met the acceptance criteria for the service. The other group (n=75) were all individuals who received treatment from the service between September 2002 and October 2005 (Table 1).

We compared the two groups using a χ²-test and found significant differences linked with a poor prognosis, male gender (Murray & Van Os, 1998), marital status (Farnia et al, 1963), and younger age at onset (Jablensky et al, 1992). This suggests a worse prognosis would be expected in the group who received early intervention treatment.

Procedure
Data were obtained from the Population-Adjusted Clinical Epidemiology database (PACE, Proctor et al, 2004). The database recorded prospective information on the presentation, management and outcomes of all individuals with first-episode psychosis in Northumberland.

Participants were identified by consultant psychiatrists and referred to the PACE team. The team gathered information on demographics, ICD-10 diagnosis, hospital admissions, medication, contact status, risk assessment and use of services, but we used only patient information on demographics, hospital admissions and employment status for the study. Data were gathered from in-patient and out-patient secondary care medical notes at presentation and annually on a continuing basis. The PACE staff...
had no contact with patients and were not involved in their care or management. They also screened the local National Health Service (NHS) computerised patient information system and sent monthly reminders to consultant psychiatrists to ensure comprehensive data.

Analysis

Data on 253 individuals were collected between October 1998 and October 2005; 64 individuals were excluded from the main analysis as they did not meet the acceptance criteria for the early intervention. Of the excluded service users, 20 presented before the service had been established; 44 presented after that but were not accepted for treatment by the service. They were excluded for the following reasons: a diagnosis of borderline personality disorder at any stage of follow-up; a predominant diagnosis of organic psychosis across the 3-year follow-up; drug/alcohol-induced psychosis that did not persist 5 days after the intoxication; having moved out of area or transferred care within the first year after referral; a diagnosis of bipolar disorder without psychotic symptoms.

Excluded service users were compared with those included in the study to ensure that their exclusion did not bias the analysis. An analysis of variance (ANOVA) showed no significant differences between the two groups.

We analysed differences between the groups in hospital bed usage, engagement with services, and as a possible confounding factor—differences in atypical antipsychotic medication.

Results

Hospital admissions

We used a one-way between-groups ANOVA to see whether the early intervention had any effect on the service users’ number of admissions in the first 3 years of receiving mental health treatment, the number of readmissions and the total number of days in hospital (Table 2). There were significant differences between the two groups in each case respectively: $P<0.001$ [F (1, 187) = 10.8], $P<0.001$ [F (1, 187) = 9.2], $P<0.01$ [F (1, 187) = 5.8].

Engagement with services

Engagement with services 1 year after first presentation was compared in the two groups using a $\chi^2$-test (Table 3). The group who used the early intervention service were significantly more likely to still be engaged with services at 1 year follow-up ($P<0.05$).

Discussion

This is the first naturalistic study to report significantly improved outcomes for individuals who used a standard NHS early intervention in psychosis service functionally compliant with the Department of Health’s guidelines.

Table 1. Demographics

<table>
<thead>
<tr>
<th>Service users treated before the early intervention in psychosis service was established, $n$</th>
<th>Service users treated by the early intervention in psychosis service, $n$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>Employed at presentation</td>
</tr>
<tr>
<td>74 (65)</td>
<td>97 (85)</td>
</tr>
<tr>
<td>65 (87)**</td>
<td>68 (91)</td>
</tr>
</tbody>
</table>

* $P<0.05$; ** $P<0.01$.

1. $n=114$.

2. $n=75$.

Table 2. Hospital admission data

<table>
<thead>
<tr>
<th>Service users treated before the early intervention in psychosis service was established ($n=114$)</th>
<th>Service users treated by the early intervention in psychosis service ($n=75$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissions in first 3 years Mean (s.d.)</td>
<td>Readmissions in first 3 years Mean (s.d.)</td>
</tr>
<tr>
<td>1.9 (2.58)</td>
<td>0.9 (1.25)</td>
</tr>
<tr>
<td>1.3 (2.35)</td>
<td>0.4 (0.99)</td>
</tr>
</tbody>
</table>

Data were analysed using SPSS version 14.0 for Windows.

Table 1. Demographics

<table>
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<tr>
<th>Service users treated before the early intervention in psychosis service was established, $n$ (%)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Men (65)</td>
<td>Employed at presentation (85)</td>
</tr>
<tr>
<td>Living alone (18)</td>
<td>Known drug use at presentation (49)</td>
</tr>
<tr>
<td>74</td>
<td>97</td>
</tr>
<tr>
<td>56</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

* $P<0.05$; ** $P<0.01$.

1. $n=114$.

2. $n=75$.
Comparison with previous research

Despite the recent inconclusive Cochrane review (Marshall & Rathbone, 2006) and the scarce number of available randomised controlled trials, several recent findings on the effectiveness of early intervention in psychosis services have been encouraging. The present study confirms the findings of Craig et al (2004) and Goldberg et al (2006) in demonstrating reduced bed days, and Peterson et al (2009) in demonstrating improved engagement. McCrone & Knapp (2007) have developed a model to estimate the economic impact of early intervention services and they have suggested that such services can save costs. In the present study the savings on reduced bed days were significantly greater than the cost of operating the service – 4755 bed days savings on reduced bed days were significantly greater such services can save costs. In the present study the early intervention group had to be retrospectively assessed to exclude those who would not have been accepted by the service. This suggests that the early intervention in psychosis team, which functioned according to the Department of Health’s model, had narrower acceptance criteria and was targeted at the more unwell. This is also supported by the significant differences in gender, age and marital status between the two groups, which suggest that the early intervention group should have had a poorer prognosis.

The quasi-experimental design used here is vulnerable to potential confounding factors. One is a possible difference in prescribing of atypical antipsychotics between the two groups – in our study, 85% of the early intervention group and 63% of the treatment-as-usual group were prescribed atypical antipsychotics as first-line antipsychotic medication. We are not aware of any research suggesting that the use of atypical antipsychotics reduces bed days and so it is unlikely that their greater use in the first group affected the results.

Another possible confounding factor is the development of crisis resolution and home treatment services. In Northumberland it was staged by both locality and function. In the west of Northumberland, a limited hours crisis service was operational throughout the period of our study (it only became a 24 h service in 2006). In the more densely populated south-east region, the service was developed in 1999 but only started operating for 24 h, 7 days a week in 2005 (that is, during the last 16 months of the data collection for our study). Glover et al (2006) suggested that only the crisis resolution services operating in this latter system have an effect on admissions for young people. This staged development may explain the low usage of crisis resolution services, with only 25% of the pre-early intervention group and 42% of the treatment-as-usual group using the crisis resolution service. Moreover, some researchers suggest that the crisis resolution service has limited effectiveness for men (Dean & Gadd, 1990; Schnyder et al, 1999) and people with a functional psychosis (Schnyder et al, 1999; Guo et al, 2001; Abas et al, 2003). Thus, the limited development of crisis resolution service in Northumberland during the period of this study and the evidence of its relative ineffectiveness with our main participant group (young men experiencing psychosis) make it unlikely that it was responsible for the highly encouraging results reported.

Limitations

There are some limitations owing to the service model and service design. The PACE database selected 44 individuals that did not meet the inclusion criteria for the early intervention; the early intervention group had to be retrospectively assessed to exclude those who would not have been accepted by the service. This suggests that the early intervention in psychosis team, which functioned according to the Department of Health’s model, had narrower acceptance criteria and was targeted at the more unwell. This is also supported by the significant differences in gender, age and marital status between the two groups, which suggest that the early intervention group should have had a poorer prognosis.

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Implications

The study has several important implications, although because of the limitations of the before/after design the findings should be interpreted with caution. Still, the results suggest that early intervention in psychosis services based on the Department of Health’s guidelines can lead to significant cost savings. They are, alongside

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Table 3. Engagement with services at one year

<table>
<thead>
<tr>
<th>Service users treated before the early intervention in psychosis service</th>
<th>Service users treated by the early intervention in psychosis service</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>In contact</td>
<td>Planned discharged</td>
</tr>
<tr>
<td>76 (67)</td>
<td>17 (15)</td>
</tr>
<tr>
<td>61 (81)</td>
<td>6 (8)</td>
</tr>
</tbody>
</table>

1. n=114.
2. n=75.
crisis resolution services, an ‘invest to save’ opportunity. More significantly, reducing hospital admissions which can often be traumatic (Morrison et al, 2003) is an important outcome for service users. The study supports the usefulness of the Mental Health Policy Implementation Guide, and shows that it can be modified successfully in a mixed urban/rural area using a hub and spoke model with the hub having a key role in ensuring functional fidelity to the guidelines. We believe that this mechanism is crucial for effectiveness.

Randomised controlled trials remain the gold standard for research on the effectiveness of different interventions. However, in the absence of credible alternative intervention packages, the ethical difficulties in withholding interventions with proven efficacy from the control group, then quasi-experimental, naturalistic designs can be of value.

References