

## Review article

# Early intervention services, cognitive–behavioural therapy and family intervention in early psychosis: systematic review

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## Background

Early intervention services for psychosis aim to detect emergent symptoms, reduce the duration of untreated psychosis, and improve access to effective treatments.

## Aims

To evaluate the effectiveness of early intervention services, cognitive–behavioural therapy (CBT) and family intervention in early psychosis.

## Method

Systematic review and meta-analysis of randomised controlled trials of early intervention services, CBT and family intervention for people with early psychosis.

## Results

Early intervention services reduced hospital admission, relapse rates and symptom severity, and improved access to

and engagement with treatment. Used alone, family intervention reduced relapse and hospital admission rates, whereas CBT reduced the severity of symptoms with little impact on relapse or hospital admission.

## Conclusions

For people with early psychosis, early intervention services appear to have clinically important benefits over standard care. Including CBT and family intervention within the service may contribute to improved outcomes in this critical period. The longer-term benefits of this approach and its component treatments for people with early and established psychosis need further research.

## Declaration of interest

None.

Early intervention services have been developed to address the needs of individuals with early psychosis. Typically, there is a delay between the onset of the first episode of psychosis and receiving an effective treatment – a period of untreated psychosis.<sup>1</sup> Reducing this duration of untreated psychosis (DUP) for people with schizophrenia may lead to an improved prognosis.<sup>1–4</sup> Early intervention services aim to detect emergent symptoms, reduce DUP, and improve early access to effective treatment, particularly in the ‘critical period’ (the first 3–5 years following onset).<sup>5–7</sup> Although at the time there was little evidence for the effectiveness of this approach, early intervention services were developed in Australia, the USA, Canada, New Zealand and elsewhere; and the widespread deployment of such services was recommended in the National Service Framework for Mental Health<sup>8</sup> and in the National Institute for Health and Clinical Excellence (NICE) guideline on schizophrenia for England and Wales.<sup>9</sup>

Since then, the provision of early intervention services has steadily increased,<sup>10</sup> with 145 early intervention services currently operating in the UK, serving about 15 750 individuals (Care Services Improvement Partnership, personal communication, 2009). Early intervention teams have also gradually evolved and now often consist of community-based multidisciplinary mental health teams that provide a combination of pharmacotherapy, family intervention, cognitive–behavioural therapy (CBT), social skills training, problem-solving skills training, crisis management and case management.<sup>11,12</sup> However, although the evidence base for early intervention services is growing, their specific benefits have not been clearly demonstrated.<sup>13,14</sup> Therefore as part of an update of the NICE guideline on schizophrenia,<sup>9,15</sup> we conducted a systematic review of early intervention services for people with a first or early episode of psychosis. Because early intervention services typically include an individually tailored combination of evidence-based psychological interventions, we also examined the data on the separate use of CBT and family intervention used specifically in the context of early psychosis.

## Method

### Search strategy and selection criteria

We identified randomised controlled trials (RCTs) of early intervention services, CBT or family intervention for people with early psychosis, using the original schizophrenia guideline<sup>9</sup> and five bibliographic databases (CINAHL, CENTRAL, EMBASE, MEDLINE, PsycINFO). The database search was conducted in September 2009 and restricted to English language papers or papers with an abstract in English. Full details of the search strategy can be found in the online supplement. Additional papers were identified by searching the reference list of retrieved articles, tables of contents of relevant journals, recent systematic reviews and meta-analyses of interventions in schizophrenia, and suggestions made by members of the schizophrenia Guideline Development Group (a comprehensive review protocol can be found in the updated edition of the full schizophrenia guideline, available from [www.nccmh.org.uk](http://www.nccmh.org.uk)).<sup>15</sup>

Early psychosis was defined as a clinical diagnosis of psychosis within 5 years of the first psychotic episode or presentation to mental health services. Interventions addressing high-risk groups or ‘pre-psychotic’/prodromal populations were excluded, as were studies where the main focus of the intervention was not on psychosis or where the duration since the first psychotic episode was greater than 5 years.

### Quality assessment

All trials meeting the eligibility criteria were assessed for methodological quality using a modified version of the SIGN checklist.<sup>16</sup> Trials that were judged to be of adequate quality were included in the review. Trials that were not clearly described as randomised were excluded as were those with fewer than ten participants per intervention arm.

## Data extraction

Two of the authors (V.B. and J.M.) entered study details into a database and assessed methodological quality. Three of the authors (V.B., C.W. and P.P.) extracted outcome data into Review Manager (RevMan version 5.0.18 for Windows XP; The Cochrane Collaboration, Oxford, UK). The assessment of study quality and all outcome data were double-checked by one author (C.W.) for accuracy, with disagreements resolved by discussion.

Where available, data were extracted for the following outcomes: hospital admission; psychotic relapse (if appropriate criteria were used); DUP; and mean positive and negative symptoms as measured using the Positive and Negative Syndrome Scale (PANSS),<sup>17</sup> Brief Psychiatric Rating Scale (BPRS),<sup>18</sup> Scale for the Assessment of Positive Symptoms (SAPS),<sup>19</sup> and the Scale for the Assessment of Negative Symptoms (SANS).<sup>20</sup> Outcome data were extracted at both end of treatment and follow-up (based on mean end-point scores). In light of the fundamental aims of early intervention services,<sup>12</sup> data on remaining in contact with services and accessing psychosocial treatments were also extracted.

## Statistical analysis

Meta-analysis was used, where appropriate, to synthesise the evidence using RevMan. Where possible, intention-to-treat with last observation carried forward data were used in the analyses. For binary outcomes, this approach assumes that participants leaving the study early, for whatever reason, had an unfavourable outcome. We calculated the standardised mean difference (SMD) for continuous outcomes, and relative risk (RR) for binary outcomes. For consistency, data from all outcomes (continuous and binary) were entered into RevMan in such a way that negative effect sizes or relative risks less than one favoured the active intervention. The number needed to treat for benefit (NNTB)<sup>21</sup> was calculated for statistically significant relative risks. Data from more than one study were pooled using a random-effects model, regardless of heterogeneity between trials, as this has recently been shown to be the most appropriate model in most circumstances.<sup>22</sup> Summary effects were assessed for clinical importance, taking into account both the point estimate and the associated 95% confidence interval (CI).

## Results

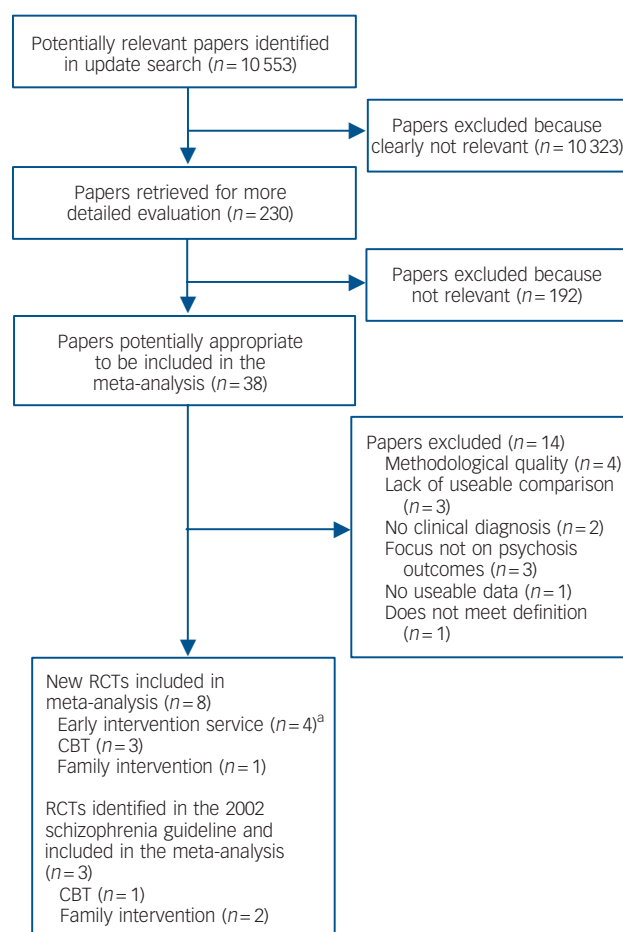
The search process and total number of trials included in the review are illustrated in Fig. 1. Details of all included trials can be found in Table 1, with further information about included and excluded studies available in online Tables DS1 and DS2.

## Early intervention services

Four published trials ( $n=800$ ) were included in the meta-analysis of early intervention services: COAST (Croydon Outreach and Assertive Support Team);<sup>23</sup> LEO (Lambeth Early Onset);<sup>11</sup> the OPUS trial;<sup>24</sup> and OTP (Optimal Treatment Project).<sup>12</sup> Inspection of the Cochrane review of early interventions in psychosis<sup>13</sup> identified three additional trials; however, these were excluded as they failed to meet our inclusion criteria regarding the population studied and comparison used. All included trials recruited participants from local mental health services such as community mental health teams, in-patient and out-patient services. However, the trials varied as to whether the participant was a new referral, with LEO<sup>11</sup> including only those making contact for the first or second time, whereas COAST,<sup>23</sup> OPUS<sup>24</sup> and OTP<sup>12</sup> considered people who had a documented first contact within a specified time period, ranging from 12 weeks to 5 years.

Interventions often included a case manager or care coordinator, with a lower case-load than in standard care. In addition to medication management, all participants allocated to early intervention services were offered a range of psychosocial interventions, including CBT,<sup>11,12,23</sup> social skills training<sup>24</sup> and family intervention<sup>12,23,24</sup> or family counselling,<sup>11</sup> and vocational strategies such as supported employment.<sup>11,12,23</sup> The psychosocial and vocational interventions were usually adapted to the needs of first-episode psychosis and offered on an 'as-required' basis. The frequency and duration of contact differed between trials, with the duration of the intervention lasting up to 2 years. Outcomes were reported at 9 months to 5 years post-randomisation.

Participants receiving early intervention services, when compared with those receiving standard care, were less likely to relapse (35.2% *v.* 51.9%; NNTB for one extra patient to avoid relapse 6, 95% CI 3 to 25; heterogeneity  $I^2=0\%$ ,  $P=0.67$ ) or be admitted to hospital (28.1% *v.* 42.1%; NNTB=7, 95% CI 5 to 7; heterogeneity  $I^2=0\%$ ,  $P=1.00$ ) (Table 2). Early intervention services also significantly reduced positive symptoms with a pooled SMD of  $-0.21$  (95% CI  $-0.42$  to  $-0.01$ ; heterogeneity  $I^2=9\%$ ,  $P=0.29$ ) and negative symptoms with a pooled SMD of  $-0.39$  (95% CI  $-0.57$  to  $-0.20$ ; heterogeneity  $I^2=0\%$ ,  $P=0.38$ ). The rate of discontinuation for any reason was lower for early intervention services compared with standard care (27.0% *v.* 40.5%; NNTB=8, 95% CI 5 to 14; heterogeneity  $I^2=40\%$ ,  $P=0.17$ ). In terms of access and engagement with treatment, although generally high, participants in early intervention



**Fig. 1** Flow diagram of selection of papers for inclusion in the clinical review.

CBT, cognitive-behavioural therapy; RCTs, randomised controlled trials.  
a. Includes RCTs published in multiple papers.

**Table 1** Characteristics of included trials

Study (primary paper)	Total participants, <i>n</i>	Treatment groups	Duration and frequency of treatment	Standard care comparison group	Outcomes extracted for this review
Early intervention services					
COAST <sup>23</sup>	59	Early intervention service including psychological interventions as required	9 months follow-up reported, with service available 7 days a week including nights	Local available CMHT services	Leaving the study for any reason, PANSS not extracted as <i>n</i> < 10 in comparison arm at 9 months
LEO <sup>11</sup>	144	Early intervention service established on principles of assertive outreach including psychosocial interventions	12 and 18 months follow-up reported, with extended hours service including weekends	Local available CMHT services	Leaving the study early, relapse, hospital admission, remaining in contact with services, receiving psychosocial interventions, positive symptoms (PANSS), negative symptoms (PANSS)
OPUS <sup>24</sup>	547	Early intervention service: assertive community treatment, family intervention and social skills training	2-year treatment duration, with service available between 8am and 5pm with a crisis plan for each patient	Services offered by local community mental health centres	Leaving the study early, hospital admission, remaining in contact with services, positive symptoms (PANSS), negative symptoms (PANSS)
OTP <sup>12</sup>	50	Early intervention service: integrated treatment with structured psychological interventions	2-year treatment duration, with treatment session provided weekly – monthly over 2 years	Regular clinic-based services (80% from hospital out-patient, 20% local community general health services)	Leaving the study early, hospital admission, relapse receiving psychosocial interventions
Cognitive-behavioural therapy					
Jackson <i>et al</i> <sup>25</sup>	91	Individual CBT: cognitively oriented psychotherapy	40-minute session weekly or fortnightly for up to 12 months	Early Psychosis Prevention and Intervention Centre (EPPIC)	Positive symptoms (BPRS), negative symptoms (SANS), hospital admission
Lecomte <i>et al</i> <sup>28</sup>	75	Group-based CBT tailored to first-episode psychosis	24 treatment sessions delivered twice a week for 3 months	Local mental health clinic or early intervention programmes	Positive symptoms (BPRS), negative symptoms (BPRS)
Lewis <i>et al</i> <sup>26</sup>	203	Individual CBT: Study of Cognitive Reality Alignment Therapy in Early Schizophrenia	15–20 h within 5 weeks with booster sessions at a further 2 weeks, 1, 2 and 3 months	Routine clinical care from local mental health units	Positive symptoms (PANSS), negative symptoms (PANSS), relapse, hospital admission
Wang <i>et al</i> <sup>27</sup>	251	Individual CBT offered at recovery stage	Six weekly 40- to 50-minute sessions	Hospital services including clozapine or risperidone	Positive symptoms (PANSS), negative symptoms (PANSS), hospital admission
Family intervention					
Goldstein <i>et al</i> <sup>29</sup>	104	Family intervention: crisis oriented, individually delivered	Six weekly intervention sessions	Standard treatment with either low- or high-dose fluphenazine	Relapse (end of treatment and 6-month follow-up)
Leavey <i>et al</i> <sup>30</sup>	106	Family intervention: education and problem-solving	Seven 1 h sessions	Usual care from psychiatric services and CMHTs	Hospital admission (end of treatment)
Zhang <i>et al</i> <sup>31</sup>	78	Family intervention: group and individual sessions focused on education	18 months with contact every 1–3 months	Standard hospital out-patient services	Hospital admission (end of treatment)

BPRS, Brief Psychiatric Rating Scale; CBT, cognitive-behavioural therapy; CMHT, community mental health team; COAST, Croydon Outreach and Assertive Support Team; LEO, Lambeth Early Onset team; OTP, Optimal Treatment Project; PANSS, Positive and Negative Syndrome Scale; SANS, Scale for the Assessment of Negative Symptoms.

services were more likely to remain in contact with the index mental health team (91.4% *v.* 84.2%; NNTB = 13, 95% CI 4 to ∞; heterogeneity  $I^2 = 0\%$ ,  $P = 0.79$ ), and were twice as likely to receive a psychosocial intervention (36.6% *v.* 14.0%; NNTB = 5, 95% CI 4 to 6; heterogeneity  $I^2 = 74\%$ ,  $P = 0.02$ ).

### Cognitive-behavioural therapy

Four published trials of CBT<sup>25–28</sup> were included in the review ( $n = 620$ ). One paper<sup>27</sup> published in Chinese but with an English abstract was translated subsequent to publication of the schizophrenia (update) guideline<sup>15</sup> and included in this analysis.

Participants were recruited from a range of services which included early intervention services, community mental health clinics and in-patient psychiatric wards. In two trials, participants were exclusively in their first episode of psychosis.<sup>25,27</sup> Another trial<sup>26</sup> additionally included participants who had been admitted for a second time, providing the episode occurred within 2 years of the first admission (17% of their sample). The fourth trial<sup>28</sup> included participants who had consulted a mental health professional for psychosis for the first time in the past 2 years. Cognitive-behavioural therapy was delivered individually in three out of the four trials,<sup>25–27</sup> with a group-based approach in the fourth.<sup>28</sup> Two of the interventions specifically adapted the CBT

**Table 2** Analysis of interventions for early psychosis compared with standard care (random-effects model)

Outcome	Time of data collection	Trials, <i>n</i>	Participants, <i>n</i> : treatment/control	Summary effect estimate (95% CI)
<b>Early intervention service</b>				
Hospital admission <sup>11,12,24</sup>	End of treatment	3	342/280	RR = 0.67 (0.54 to 0.83)
Relapse (full or partial) <sup>11,12</sup>	End of treatment	2	91/81	RR = 0.66 (0.47 to 0.94)
Positive symptoms (PANSS or SAPS) <sup>11,24</sup>	End of treatment	2	260/208	SMD = -0.21 (-0.42 to -0.01)
Negative symptoms (PANSS or SANS) <sup>11,24</sup>	End of treatment	2	260/208	SMD = -0.39 (-0.57 to -0.20)
Not receiving a psychological intervention <sup>11,12,24</sup>	End of treatment	3	344/286	RR = 0.67 (0.46 to 0.97)
Not in contact with index team <sup>11,24</sup>	End of treatment	2	314/266	RR = 0.60 (0.39 to 0.92)
Leaving the study early for any reason <sup>11,12,23,24</sup>	End of treatment	4	408/392	RR = 0.71 (0.53 to 0.94)
<b>Cognitive-behavioural therapy</b>				
Positive symptoms (BRPS, PANSS or SAPS) <sup>25-28</sup>	End of treatment	4	285/251	SMD = -0.05 (-0.22 to 0.12)
Positive symptoms <sup>26-28</sup>	Up to 2 years follow-up	3	233/209	SMD = -0.60 (-0.79 to -0.41)
Negative symptoms (BRPS, PANSS or SAPS) <sup>25,27,28</sup>	End of treatment	3	207/191	SMD = 0.03 (-0.17 to 0.23)
Negative symptoms <sup>26-28</sup>	Up to 2 years follow-up	3	233/209	SMD = -0.45 (-0.80 to -0.09)
Relapse <sup>26,27</sup>	Up to 2 years follow-up	2	227/227	RR = 0.67 (0.24 to 1.85)
Hospital admission <sup>25,26</sup>	Up to 2 years follow-up	2	146/148	RR = 1.01 (0.76 to 1.35)
<b>Family intervention</b>				
Relapse <sup>29</sup>	End of treatment	1	52/52	RR = 0.58 (0.25 to 1.36)
Relapse <sup>29</sup>	Up to 2 years follow-up	1	52/52	RR = 0.75 (0.39 to 1.43)
Hospital admission <sup>30,31</sup>	End of treatment	2	99/90	RR = 0.51 (0.24 to 1.10)
Hospital admission and relapse (combined) <sup>29-31</sup>	End of treatment	3	151/142	RR = 0.50 (0.32 to 0.80)

BRPS, Brief Psychiatric Rating Scale; PANSS, Positive and Negative Syndrome Scale; RR, relative risk; SANS, Scale for the Assessment of Negative Symptoms; SAPS, Scale for the Assessment of Positive Symptoms; SMD, standardised mean difference.

approach for early psychosis,<sup>25,28</sup> with the remaining two interventions targeting positive symptoms<sup>26</sup> and insight building.<sup>27</sup> The frequency of sessions and the duration of treatment varied across trials, with the total duration ranging from 5 weeks (plus booster sessions)<sup>26</sup> to 1 year.<sup>25</sup>

At up to 2 years post-treatment follow-up, when compared with standard care alone, CBT significantly reduced mean positive symptoms with a pooled SMD of -0.60 (95% CI -0.79 to -0.41; heterogeneity  $I^2 = 0\%$ ,  $P = 0.44$ ) and mean negative symptoms with a pooled SMD of -0.45 (95% CI -0.80 to -0.09; heterogeneity  $I^2 = 62\%$ ,  $P = 0.07$ ). These benefits were not evident at the end of treatment in terms of both positive (SMD = -0.05, 95% CI -0.22 to 0.12; heterogeneity  $I^2 = 0\%$ ,  $P = 0.92$ ) and negative symptoms (SMD = 0.03, 95% CI -0.17 to 0.23; heterogeneity  $I^2 = 0\%$ ,  $P = 0.41$ ), or relapse within the 2-year follow-up period (27.8% v. 32.2%,  $P = 0.44$ ; heterogeneity  $I^2 = 79\%$ ,  $P = 0.03$ ). Rates of hospital admission up to 2 years follow-up also failed to demonstrate any additional benefit for CBT compared with standard care (38.4% v. 38.5%,  $P = 0.94$ ; heterogeneity  $I^2 = 0\%$ ,  $P = 0.36$ ).

### Family intervention

Three trials ( $n = 288$ ) assessing family intervention in early psychosis were included in the review.<sup>29-31</sup> Participants were recruited from psychiatric services, including in-patient units, and were either first or second admissions,<sup>29,31</sup> or had made first contact with services within the past 6 months.<sup>30</sup> Two trials<sup>29,30</sup> included the individual with psychosis in the family sessions, whereas in Zhang *et al*<sup>31</sup> the majority of family sessions did not include the patient. The interventions delivered in each trial included an element of psychoeducation and problem-solving, with crisis management also evident in one trial.<sup>29</sup> Interventions varied in their mode of delivering, with two trials<sup>29,30</sup> utilising an individual family approach and the remaining trial combining individual and group-based family sessions. Only one trial<sup>29</sup> reported relapse and a further two trials<sup>30,31</sup> reported hospital admission; these outcomes were combined to increase statistical power.

The combined analysis indicated that at the end of treatment, participants receiving family intervention were less likely to

relapse or be admitted to hospital compared with those receiving standard care (14.5% v. 28.9%; NNTB = 7, 95% CI 4 to 20; heterogeneity  $I^2 = 0\%$ ,  $P = 0.40$ ). At up to 2 years follow-up, one study<sup>29</sup> reported a numerically lower risk of relapse (23.1% v. 30.8%,  $P = 0.38$ ), although this was not statistically significant. None of the included family intervention trials provided data on mean positive and negative symptoms.

## Discussion

### Main findings

For people with early psychosis, in four trials of early intervention services, four trials of CBT, and three trials of family intervention, meta-analysis demonstrated advantages over standard care. By the end of treatment, early intervention services produced clinically important reductions in the risk of both relapse and hospital admission. In addition, small effects favouring early intervention services were shown in terms of reduced symptom severity and improved access to and engagement with treatment (including psychological therapies). Family intervention also produced clinically important reductions in the risk of relapse and hospital admission when compared with standard care. In the 2 years following the intervention, medium effects favouring CBT were demonstrated in terms of reduced positive and negative symptom severity. We found no data on the effect of family intervention on symptoms and insufficient evidence to reach a conclusion about the impact of CBT on relapse or hospital admission.

### Early intervention services

Compared with a previous review of early interventions in psychosis,<sup>13</sup> our meta-analysis found stronger evidence to support the effectiveness of early intervention services overall. The earlier review included fewer trials that specifically focused on service-level interventions delivered during the 'critical period' following onset of psychosis. Furthermore, although the previous review included both discrete psychosocial and multicomponent service-level interventions, there was a lack of comparable trials for any conclusions to be drawn. Our findings do, however,

substantiate those previously reported in a narrative review of randomised and non-randomised studies by Penn and colleagues,<sup>14</sup> who concluded that early interventions had beneficial effects across a range of domains, although further investigation was needed to establish the robustness of these findings.<sup>14</sup> Our review attempts to overcome these limitations and provides the first meta-analytic evidence indicating that both early intervention services and discrete psychological interventions improve outcomes for early psychosis.

In the present review, the early intervention services provided in all of the trials included the provision of psychosocial interventions, pharmacological treatment and some form of case management involving smaller case-loads (1:10) and an assertive approach to treatment. All of the components were tailored to meet the needs of the individual patient and offered at the earliest opportunity. These elements were not present in treatment as usual, although an assertive approach to treatment is so common that it cannot be specifically excluded. The psychological interventions used in the included trials were CBT and either family intervention<sup>12,23,24</sup> or family counselling.<sup>11</sup> It is possible that the reduced case-loads and more appropriate use of pharmacological interventions within early intervention services may account for some of the clinical and statistically important improvements demonstrated. Although further research is needed to investigate the beneficial contributions of these features of early intervention, given the positive effects of CBT and family intervention when delivered as discrete interventions for people with early psychosis, it is just as likely that these two psychosocial interventions have contributed to some of the benefits of early intervention services in this review.

Gleeson and colleagues<sup>32</sup> recently demonstrated that the addition of a cognitive-behavioural and family therapy-based relapse prevention programme to an early intervention service for individuals in remission from a first episode of psychosis was more likely to prevent or significantly delay a second episode when compared with an early intervention service alone. In this trial the early intervention service alone included only family psychoeducation and peer support. This study provides some evidence to support our hypothesis: that an important part of the overall effectiveness of the early intervention teams included in our meta-analysis derives from the inclusion of two evidence-based psychological interventions, namely, CBT and family intervention. In our review we have shown that the likelihood of a service user receiving a psychosocial intervention in an early intervention team is double that found in a community mental health team.

### Limitations

One limitation of the present review is the paucity of trials included in each meta-analysis. We excluded trials focusing on high-risk groups or prevention of psychosis because of the possible ethical implications of targeting interventions at these individuals.<sup>5</sup> Another limitation is the variability in long-term follow-up measures available in different trials making some comparisons difficult. Only one trial of an early intervention service provided long-term data (up to 5 years post-randomisation),<sup>24</sup> whereas all four trials of CBT<sup>25–28</sup> and one of family intervention<sup>29</sup> included long-term follow-up measures. Therefore, it remains to be determined whether the effects of early intervention services are sustained.

### Psychological interventions

Despite the limitations, our findings regarding the efficacy of CBT and family intervention are consistent with, and reflect, the wider evidence base found in the treatment and management of later

psychotic episodes. The updated edition of the schizophrenia guideline<sup>15</sup> recommends that both interventions should be offered to people experiencing an acute episode of schizophrenia and for promoting recovery in those with established schizophrenia.

The evidence presented here suggests that CBT for early psychosis has longer-term benefits in terms of reducing symptom severity. Consistent with the wider evidence base for CBT for established psychosis, the present review failed to find any evidence that CBT reduced relapse rates in early psychosis, which suggests that the main benefits of this intervention are likely to be a reduction in symptoms and distress in early and established psychosis. This finding confirms a recent review assessing both RCTs and non-randomised studies of CBT in first-episode psychosis, which also failed to demonstrate positive effects on relapse and readmission.<sup>33</sup>

Although the number of RCTs for family interventions for early psychosis was limited in our review, the evidence is consistent with the larger body of evidence for the role of family interventions in established schizophrenia, in that family intervention reduced combined hospital admission and relapse rates. The review conducted for the updated edition of the schizophrenia guideline<sup>15</sup> also found robust evidence for the efficacy of family intervention in established schizophrenia in reducing symptoms at the end of treatment. However, in the present review, none of the included trials reported measures that allowed us to assess this in the context of early psychosis. It is, therefore, anticipated that family intervention in first-episode psychosis may also reduce symptom levels.

### Critical period

The studies included in the present review did not provide any data relating to DUP, as all papers focused on people with an agreed diagnosis, not on populations at high risk of becoming psychotic and receiving a diagnosis. A number of other reviews assessing DUP as a predictor have indicated that longer DUP is subsequently associated with poorer outcomes, including reduced adherence to CBT,<sup>34</sup> altered response to antipsychotic medications,<sup>35</sup> poorer social functioning<sup>36</sup> and increased levels of disability.<sup>37</sup> There is some suggestion from studies assessing the impact of early intervention programmes on high-risk and ultra-high-risk populations that education and awareness of psychosis may significantly reduce DUP.<sup>38</sup> However, further research is needed to clarify issues surrounding DUP.<sup>39</sup>

The present review focused on the first 3–5 years following the onset of illness. This period has been defined as a critical period, when many of the psychological, clinical and social deteriorations associated with psychosis might occur,<sup>5,7,40</sup> and when interventions might potentially have their greatest positive impact on prognosis.<sup>5,6</sup> Although the current evidence to support this idea is limited, intervening at the earliest possible opportunity makes both practical and ethical sense, and hope remains that such intervention might reduce subsequent symptom severity, loss of functioning and other negative consequences of psychosis such as social exclusion.<sup>41</sup> Intervening early may also help to reduce the adverse social and societal consequences of the disorder for both individuals and their family and carers. However, it can also be argued that providing excellent care and access to a range of appropriate and effective psychological, pharmacological and vocational interventions should be available at any stage of psychosis.<sup>42,43</sup>

### Implications

On balance, the evidence reviewed here suggests that early intervention services are an effective way of delivering care for people with early psychosis and can reduce hospital admission,

relapse rates and symptom severity, while improving access to and engagement with a range of treatments. The characteristics of these early intervention services include the provision of multi-modal psychosocial interventions, pharmacotherapy, and some form of case management with lower case-loads and an assertive approach to treatment, all within the context of intervening as early as possible. Our review also suggests that providing evidence-based psychological interventions as part of a comprehensive early intervention service may contribute to improving outcomes for people with early psychosis. It is important that these psychological interventions have been shown rather more robustly to be effective for people with established schizophrenia. This raises the possibility that comprehensive services comparable to those described here as early intervention services, which include a full range of evidence-based psychological interventions, should be considered for people with established psychosis.

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EXTRA  
CONTENT  
ONLINEOPEN  
ACCESSpoems  
by  
doctors

## Strategy

Peter Wells

Love was at a premium –  
Jane ran out of supplies.  
Father a miner, his life stained by cold dust,  
his chest a box of birds,  
let go his last persecutory breath.

Mum had three daughters to keep,  
all got the message:  
love is a ration book.

Jane, the youngest, had least time  
for what was left of the crust;  
a starveling in love  
she sickened for it.  
When the strategy was rumbled  
she risked the lot  
and slit her wrists

In and out of hospital  
a lifetime career;  
the only way to keep going  
and to save Mum.

She hid behind the curtains  
when she won the ward prize for a cake.  
She could not explain herself.

Paint became her arbiter  
picture after picture –  
they did not need words.

At long last, she found words:  
'I got into hospital by pretending to be sick,  
I got home by pretending to be sane'.

## Data supplement

### Search strategy

- Pre-2002: schizophrenia guideline (published 2002)
- Post-2002: MEDLINE, EMBASE, PsycINFO, CINAHL – Ovid SP interface

### Early intervention services

#	Search history
1	exp paranoid psychosis/ or exp schizophrenia/ or "schizophrenia and disorders with psychotic features"/
2	("paranoia (psychosis)" or paranoid disorders or psychotic disorders or psychosis).sh.
3	(schizo\$ or hebephreni\$ or oligophreni\$ or psychotic\$ or psychosis or psychoses).mp.
4	exp movement disorders/ or exp motor dysfunction/
5	exp dyskinesia/ or (akathisia, drug-induced or akathisia or dyskinesia, drug-induced).sh.
6	neuroleptic malignant syndrome.sh.
7	(tardiv\$ and dyskine\$).mp.
8	(akathisi\$ or acathisi\$).mp.
9	(neuroleptic\$ and ((malignant and syndrome) or (movement and disorder))).mp.
10	(parkinsoni\$ or neuroleptic induc\$).mp. not (parkinson\$ and disease).ti.
11	((chronic\$ or sever\$) and mental\$ and (ill\$ or disorder\$)).mp.
12	or/1-11
13	early intervention service\$.mp.
14	12 and 13
15	limit 14 to yr="2002 - 2007"
16	remove duplicates from 15
17	from 16 keep 1-65

### Psychological interventions, including CBT and family intervention

#	Search history
1	exp schizophrenia/
2	(paranoid schizophrenia or paranoid psychosis).sh.
3	(schizo\$ or hebephreni\$).mp.
4	or/1-3
5	exp family therapy/ or (exp family/ and (therap\$ or intervent\$).mp.)
6	(famil\$ and (therap\$ or intervent\$)).mp.
7	exp cognitive therapy/
8	((cognitive\$ and behavio\$ and therap\$) or (cognit\$ and (technique\$ or therap\$ or restructur\$ or challeng\$)) or attribution or (self and (instruct\$ or management\$)) or ret or (rational and emotiv\$)).mp.
9	((social or personal or interpersonal or socialisation) and (skills\$ or program\$ or train\$)).mp.
10	((cognitive\$ or neuro\$ or memory) and remediati\$) or (cogniti\$ and (train\$ or function\$ or modifi\$)) or (attention\$ and (train\$ or management\$ or remediati\$)) or (memory or (train\$ and remed\$)) or (cognitiv\$ adj rehab\$)).mp.
11	exp client education/ or exp patient education/ or exp psychoeducation/
12	((patient adj (education or teaching or instruction or information or knowledge)) or (educational adj (program\$ or intervention\$))).mp.
13	exp counseling/ or exp supportive psychotherapy/
14	(counsel\$ or (support\$ adj (therap\$ or psychotherapy))).mp.
15	exp psychoanalysis/ or exp psychoanalytic therapy/
16	(psychoanaly\$ or ((analytic\$ or dynamic\$ or psychodynamic\$) and (therap\$ or psychotherap\$))).mp.
17	or/5-16
18	exp clinical trials/ or exp clinical trial/ or exp controlled clinical trials/
19	exp crossover procedure/ or exp cross over studies/ or exp crossover design/
20	exp double blind procedure/ or exp double blind method/ or exp double blind studies/ or exp single blind procedure/ or exp single blind method/ or exp single blind studies/
21	exp random allocation/ or exp randomization/ or exp random assignment/ or exp random sample/ or exp random sampling/
22	exp randomized controlled trials/ or exp randomized controlled trial/
23	(clinical adj2 trial\$).tw.
24	(crossover or cross over).tw.
25	((single\$ or doubl\$ or trebl\$ or tripl\$) adj5 (blind\$ or mask\$ or dummy)) or (singleblind\$ or doubleblind\$ or trebleblind\$).tw.
26	(placebo\$ or random\$).mp.
27	(clinical trial\$ or random\$).pt. or (random\$ or clinical control trial).sd.
28	animals/ not (animals/ and human\$.mp.)
29	animal\$/ not (animal\$/ and human\$)
30	(animal not (animal and human)).po.
31	(or/18-27) not (or/28-30)
32	and/4,17,31
33	limit 32 to yr="2002 - 2007"
34	remove duplicates from 33



#	Search history
#1	MeSH descriptor Schizophrenia explode all trees
#2	(schizo* or hebephreni*):ti or (schizo* or hebephreni*):ab
#3	(#1 OR #2)
#4	(famil*):ti,ab,kw or (cognitiv* and behavio* and therap*):ti,ab,kw or (social* or personal or interpersonal) and (skills* or program* or train*):ti,ab,kw or ((cognitive* or neuro* or memory) and remediat*):ti,ab,kw or (cogniti* and (train* or function* or modif*)):ti,ab,kw
#5	(attention* and (train* or management* or remediat*)):ti,ab,kw or (memory or (train* and remed*)):ti,ab,kw or (patient and (education or instruction)):ti,ab,kw or (psychoeducat*):ti,ab,kw
#6	(counsel*):ti,ab,kw or (support* and (therap* or psychotherap*)):ti,ab,kw or (psychoanaly*):ti,ab,kw or ((analytic* or dynamic* or psychodynamic*) and (therap* or psychotherap*)):ti,ab,kw
#7	MeSH descriptor Sensory Art Therapies explode all trees
#8	MeSH descriptor Creativeness, this term only
#9	MeSH descriptor Music, this term only
#10	(music* or rhythmic* or melod*):ti or (music* or rhythmic* or melod*):ab
#11	((auditory or acoustic) near (stimulat* or cue*)):ti or ((auditory or acoustic) near (stimulat* or cue*)):ab
#12	(compose or composing or guitar* or hearing modalit* or improvis* or improviz* or piano* or sing or sings or singing or song* or (listen* near (reminisc* or orientat*))) :ti or (compose or composing or guitar* or hearing modalit* or improvis* or improviz* or piano* or sing or sings or singing or song* or (listen* near (reminisc* or orientat*))) :ab
#13	MeSH descriptor Drama, this term only
#14	MeSH descriptor Psychodrama explode all trees
#15	(psycho?drama* or *drama* or ((game* or play?back) near theatre*) or mime* or thera?play*):ti or (psycho?drama* or *drama* or ((game* or play?back) near theatre*) or mime* or thera?play*):ab
#16	*improvi?ation*:ti or *improvi?ation*:ab
#17	(creative or stories or story*):ti or (creative or stories or story*):ab
#18	*roleplay* or *role-play*:ti or *roleplay* or *role-play*:ab
#19	MeSH descriptor Art, this term only
#20	(art or arts or artist* or drawing* or painting*):ti or (art or arts or artist* or drawing* or painting*):ab
#21	*dance* or dancing or (movement near therap*):ti or *dance* or dancing or (movement near therap*):ab
#22	(joco?therap* or masks or puppet* or (play* near (filial or course* or curricul* or educat* or intervention* or learn* or module* or program* or rehab* or scheme* or skill* or teach* or therap* or tool* or train* or treat* or work?shop*))) :ti or (joco?therap* or masks or puppet* or (play* near (filial or course* or curricul* or educat* or intervention* or learn* or module* or program* or rehab* or scheme* or skill* or teach* or therap* or tool* or train* or treat* or work?shop*))) :ab
#23	(chromo?therap* or (colo?r* near (heal* or course* or curricul* or educat* or intervention* or learn* or module* or program* or rehab* or scheme* or skill* or teach* or therap* or tool* or train* or treat* or work?shop*))) :ti or (chromo?therap* or (colo?r* near (heal* or course* or curricul* or educat* or intervention* or learn* or module* or program* or rehab* or scheme* or skill* or teach* or therap* or tool* or train* or treat* or work?shop*))) :ab
#24	(expressive near (intervention* or therap* or treat*)):ti or (expressive near (intervention* or therap* or treat*)):ab
#25	(#4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24), from 2007 to 2008
#26	(#3 AND #25), from 2008 to 2008

**Table DS1** Full details of included trials

Study (primary reference)	n	Participant characteristics	Treatment group	Duration and frequency of treatment	Standard care comparison group
Early intervention services COAST <sup>23</sup>	59	Participants were recruited from local CMHTs and aged between 18 and 65 years with a documented first contact with service <5 years. Participants had a diagnosis of any functional psychosis.  Participants were excluded if they had a history of organic psychosis or primary intellectual disability.	Early intervention service: care coordinators, with low case-loads (n < 12). Range of interventions offered flexibly as needed. All offered medication review and monitoring, vocational and benefits help, information about psychosis, individual CBT and family meetings and family intervention as appropriate.	Service available 7 days a week with night covered by a crisis response team  9 months follow-up reported	Offered usual services available in a local multidisciplinary team but no specialised psychological interventions nor information aimed at first-episode psychosis
LEO <sup>11</sup>	144	Participants were aged 16–40 years living in the borough of Lambeth and presenting to mental health services for the first time with non-affective psychoses (F20–F29 ICD–10). People who had presented once but had disengaged without treatment were considered.  Participants were excluded if they had organic psychosis or a primary diagnosis of drug or alcohol misuse.	Early intervention service: community team established on principles of assertive outreach providing evidence-based interventions adapted to the needs of individuals with early psychosis. These included low-dose antipsychotic regimens, CBT, family counselling and vocational strategies.	Extended hours service including weekends and bank holidays  12 and 18 months follow-up reported	CMHT services with no additional training in managing early psychosis. Teams were however encouraged to use current clinical guidelines.
OPUS <sup>24</sup>	547	Participants were included from in-patient and out-patient mental health services. All had a diagnosis of a schizophrenia-spectrum disorder (ICD–10 F2 category) and had not been receiving antipsychotic medication for more than 12 weeks of continuous treatment.	Early intervention service: integrated treatment which consisted of assertive community treatment with family intervention programmes and social skills training. Each patient was allocated a primary team member responsible for coordinating treatment across the multidisciplinary team and maintaining contact with the patient. Case-loads were about a 1:10 ratio. A crisis plan was developed for each patient.	2-year treatment duration  Office hours were Monday to Friday 8am to 5pm. Outside these hours patients could telephone and leave a message with their primary team member.	Services available at a local community mental health centre. This typically included a physician, community mental health nurse and a social worker in some cases. Case-loads varied between a ratio of 1:20 and 1:30
OTP <sup>12</sup>	50	Participants were consecutive new referrals to a mental health service aged 18–35 and had a diagnosis of a schizophrenia-spectrum disorder (SCID–IV). Onset of psychotic symptoms was less than 2 years, although participants with more than one acute psychotic episode prior to seeking treatment were considered.  Participants with primary substance use disorders or intellectual disabilities were excluded as were temporary residents.	Early intervention service: integrated treatment combined optimal pharmacological interventions, case management with low case-load (a 1:10 ratio), skills training, and home-based crisis management. Participants received family intervention in the form of family psychoeducation, cognitive-behavioural family communication and problem-solving training, and individual cognitive-behavioural strategies for reducing residual symptoms and disability. Treatment sessions were conducted in the home and tailored to the needs of the individual.	2-year treatment duration  Weekly hour-long treatment sessions occurred for the first 2 months, with sessions reduced to once every 3 weeks for the remainder of the first year and once monthly for the second year	Regular clinic-based services including optimal pharmacological interventions and case management

(continued)

**Table DS1** Full details of included trials (*continued*)

Study (primary reference)	n	Participant characteristics	Treatment group	Duration and frequency of treatment	Standard care comparison group
Cognitive-behavioural therapy Jackson <i>et al</i> <sup>25</sup>	91	Eligible participants were aged 15–29 years and experiencing a first episode of psychosis (DSM–III–R). Participants were excluded if they had psychosis with an organic cause, epilepsy, evidence of IQ < 70 or diagnosed with substance dependence	CBT: cognitively oriented psychotherapy for first-episode psychosis (COPE) which consists of four stages: engagement, assessment, adaptation and secondary morbidity. COPE agenda typically included psychoeducation. It focused on stigma and identity issues, problems with motivation and social withdrawal. These issues were addressed using cognitive-behavioural techniques. CBT: group-based intervention following a manualised approach but adapted to the needs of first-episode psychosis. The manual covered four areas and followed a positive approach which emphasised reaching specific goals, decreasing distress and findings the solutions that worked best for the individual.	12 months duration. Although the frequency of sessions was determined by the needs of the clients, typically participants received one 40-minute session per week or fortnight.	Standard care from the Early Psychosis Prevention and Intervention Centre (EPPIC), which includes access to mobile assessment, home-based treatment and personal assessment and crisis evaluation clinic, in-patient and out-patient units, family work (but not structured family intervention) and prolonged recovery programmes.
Lecomte <i>et al</i> <sup>28</sup>	75	Participants were recruited from early intervention programmes and community mental health clinics. Participants were aged 18–35 years and were currently presenting with persistent or fluctuating psychotic symptoms. Individuals with a diagnosis of non-affective psychosis were included as were participants with an unclear diagnosis. Participants had consulted a mental health professional about their psychotic symptoms for the first time within the past 2 years.	CBT: individual manualised approach which was conducted over four stages and focused on engagement, problem formulation, intervention and monitoring. In particular, positive psychotic symptoms were addressed, with alternative hypotheses generated for abnormal beliefs and hallucinations. The intervention also aimed to identify factors which precipitated and alleviated positive symptoms and distress. CBT: focused on psychoeducation and insight-building. The intervention aimed to replace irrational thoughts with rational ones and to facilitate communication with the family. CBT occurred in the recovery stage.	24 treatment sessions delivered twice a week for 3 months.	Usual services delivered by local mental health clinics or early intervention programmes if available in the area. Clients in the control group could receive one of the interventions (CBT or skills training) if they wished after the 9-month follow-up period
Lewis <i>et al</i> <sup>26</sup>	203	Participants with organic brain disorders and those already receiving one of the interventions were excluded. Participants had a clinical diagnosis of schizophrenia-spectrum disorders (DSM–IV). Inclusion criteria included either a first or second admission (within 2 years of a first admission) for psychosis. Participants with organic disorders or substance misuse were excluded	CBT: individual manualised approach which was conducted over four stages and focused on engagement, problem formulation, intervention and monitoring. In particular, positive psychotic symptoms were addressed, with alternative hypotheses generated for abnormal beliefs and hallucinations. The intervention also aimed to identify factors which precipitated and alleviated positive symptoms and distress.	5 weeks CBT programme plus booster sessions after a further 2 weeks and 1, 2 and 3 months	Routine clinical care from local mental health units
Wang <i>et al</i> <sup>27</sup>	251	Participants had a diagnosis of schizophrenia (ICD–10) and were in their first episode of schizophrenia	CBT: focused on psychoeducation and insight-building. The intervention aimed to replace irrational thoughts with rational ones and to facilitate communication with the family. CBT occurred in the recovery stage.	6 weekly sessions lasting about 40–50 min	Participants received standard hospital services and were allocated to either clozapine or risperidone. Treatment followed three stages with each stage lasting 3–4 weeks: medication, maintenance and recovery.

(*continued*)

**Table DS1** Full details of included trials (*continued*)

Study (primary reference)	n	Participant characteristics	Treatment group	Duration and frequency of treatment	Standard care comparison group
Family intervention Goldstein <i>et al</i> <sup>29</sup>	104	Participants screened positive for probable schizophrenia on the New Haven Schizophrenia Index: 69% of participants were first admissions, with the remaining 31% second admissions	Family intervention: crisis-oriented family therapy. Goals of the interventions included: (a) acceptance of psychosis; (b) identifying probable precipitating stresses at the time onset occurred; (c) identifying potential factors that the family may be vulnerable to; and (d) planning to minimise the impact of any future stresses. Family intervention: individual sessions which usually occurred in the patient's home. The interactive sessions included educational components relating to psychotic illness, symptoms and treatment. Families were also taught coping strategies, problem-solving techniques with sessions covering communication with the patient. Family intervention: group involving about 15 families and individual family sessions both of which usually did not include the patient. Sessions focused on education about management of the patient's treatment and discussion about the problems faced by the families and the importance of continuing medication. Families with common problems were asked to attend family groups, whereas those with unique or complex problems had individual counselling.	Six weekly sessions	Participants received either a high or low dose of fluphenazine and received standard care from the mental health centre
Leavey <i>et al</i> <sup>30</sup>	106	Participants had a recent diagnosis of psychosis (ICD-9) and were in contact with psychiatric services within the past 6 months. Participants with organic disorders or intellectual difficulties were excluded		Seven sessions each lasting about 1 h delivered within 6 months of first contact with services	Usual care from psychiatric services and CMHTs
Zhang <i>et al</i> <sup>31</sup>	78	Participants were first-admission males discharged from a mental health ward and met the Chinese Medical Association's criteria for schizophrenia Participants who were not living within commuting distance to the hospital were excluded.		Group and family sessions occurred once every 1-3 months for 18 months. Minimum contact with families was once every 3 months.	Standard services available through the hospital out-patient department

CBT, cognitive-behavioural therapy; COAST, Croydon Outreach And Assertive Support Team; CMHTs, community mental health teams; LEO, Lambeth Early Onset; OTP, Optimal Treatment Project.

**Table DS2** Excluded studies<sup>a</sup> with reasons for exclusion

Study (primary reference)	Interventions	Reasons for exclusion
Power <i>et al</i> <sup>44</sup>	Early intervention service	Study does not compare an early intervention service with standard care. RCT of GP education intervention (and link to early intervention service team) v. standard care. Main outcome is GP referral to services.
Linszen <i>et al</i> <sup>45</sup>	Early intervention service/family intervention	No standard care comparison group: early intervention service plus individual therapy v. early intervention service plus family therapy
PACE (McGorry <i>et al</i> ) <sup>46</sup>	Early intervention service	No clinical diagnosis: main aim of the study is to prevent psychosis in high-risk groups
Rosenbaum <i>et al</i> <sup>47</sup>	Early intervention service	Methodological quality: participants not properly randomised into all treatment conditions
Gleeson <i>et al</i> <sup>32</sup>	Early intervention service + CBT and family therapy for relapse prevention.	Study does not compare an early intervention service with standard care. RCT of early intervention service + CBT and family therapy v. early intervention service.
Øhlenschläger <i>et al</i> <sup>48</sup>	Early intervention service	Focus not on psychosis: main outcome is use of coercive measures
Waldheter <i>et al</i> <sup>49</sup>	Early intervention service	Methodological quality: preliminary data, participants not randomised
HEART (Kelly <i>et al</i> ) <sup>50</sup>	Early intervention service	Methodological quality: participants not randomised
EDIE (Morrison <i>et al</i> ) <sup>51</sup>	CBT	No clinical diagnosis: main aim of study is to prevent psychosis in ultra-high-risk groups
Edwards <i>et al</i> <sup>52</sup>	CBT	Focus not on psychosis: main aim of study concerned substance misuse
Haddock <i>et al</i> <sup>53</sup>	CBT	No standard care comparison: CBT v. supportive counselling
Jackson <i>et al</i> <sup>54</sup>	CBT	Methodological quality: study not randomised
Jackson <i>et al</i> <sup>55</sup>	CBT	No standard care comparison: CBT v. befriending
Jolley <i>et al</i> <sup>56</sup>	CBT	Methodological quality: <i>n</i> <10 in one treatment arm
LifeSPAN (Power <i>et al</i> ) <sup>57</sup>	CBT	Focus not on psychosis: main aim of the study is on suicide prevention
Newton <i>et al</i> <sup>58</sup>	CBT	No clinical/formal diagnosis of psychosis
So <i>et al</i> <sup>59</sup>	Family intervention	No extractable data relevant to the present review: carer outcomes only
Chan <i>et al</i> <sup>60</sup>	Family intervention	Intervention does not meet definition of family intervention

CBT, cognitive-behavioural therapy; EDIE, Early Detection and Intervention Evaluation trial; HEART, Hounslow early active recovery team; PACE, personal assessment and crisis evaluation; RCT, randomised controlled trial; GP, general practitioner.  
a. This table includes four additional papers excluded from the 2002 schizophrenia guideline.

## Additional references

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