Data supplement

Table DS1 Characteristics of studies of community-based services

Study reference	Service description	Study design and duration	Participants and total *n* (alternative *n*/comparison *n*)	Outcomes assessed[a]	Quality rating and main limitations[b]
Timko et al[17] (2006)	Veterans' community residential facilitites, California, USA	RCT 30-day follow-up (from discharge)	Adults assessed as requiring acute admission with: dual diagnosis, no immediate risk to self or others. Sample mostly veterans *n* = 230 (57/173)	1, 2, 4	Moderate 1, 2
Hawthorne et al[18] (2005)	6 crisis hostels (11–14 bedded), San Diego, USA	RCT 2-month follow-up	Veterans aged 18–59 who: have diagnosis of affective disorder, bipolar disorder or psychosis, are voluntary patients, consent to participate in study *n* = 99 (52/47)	1, 2, 3, 4	Moderate 1, 2, 7 (some satisfaction data collected by service staff)
Boardman et al[19] (1999)	Community mental health centre beds, UK	Prospective non-randomised quasi-experiment 1-year follow-up	Adults assessed as requiring acute admission who have: no acute admissions in past 12 months, English-speaking, no primary diagnosis other than mental illness *n* = 177 (110/67)	1, 2, ,3, 4	Moderate 1, 2
Fenton et al[20] (1998)	Crisis hostel (8 beds), Maryland, USA	RCT 6-month follow-up	Adults assessed as requiring acute admission who are: voluntary, insured, consenting to participate *n* = 119 (69/50)	1, 2, 3, 4	Moderate 1
Mosher et al[21] (1995) (Soteria study 2)	Soteria crisis hostel, California, USA	RCT 6-week follow-up	Adults aged 16–30 requiring acute admission who: have diagnosis of schizophrenia, no more than one previous brief admission, are unmarried *n* = 100 (45/55)	1	Moderate 1, 2, 6
Polak & Kirby[22] (1976)	Adult family placement, Colrado, USA	RCT 4-month follow-up	Adults assessed as requiring acute admission *n* = 85 (37/38)	1, 3	Moderate 1, 2, 3
Readhead et al[23] (2002)	Adult family placements, UK	Interrupted time series study 1-year comparison period	Adults aged 18–64 assessed as requiring acute admission with: no immediate high risk to self or others, no need for treatment change *n* not stated	2, 4	Low 2, 3
Hawthorne et al[24] (1999)	5 crisis hostels, San Diego, USA	Prospective non-randomised quasi-experiment 4-month follow-up	Adults requiring acute admission with diagnosis of depression, psychosis or bipolar disorder *n* = 554 (368/186)	1, 2, 3	Low 1, 2, 4
Ciompi et al[24] (1993)	Soteria crisis hostel, Switzerland	Prospective non-randomised quasi-experiment 2-year follow-up	Adults aged 17–35, recent onset (1 year) of DSM–III diagnosis of schizophrenia or similar, acutely ill, not drug or alcohol dependent, adherent with treatment *n* = 44 (22/22)	1, 2, 4	Low 2, 3
Ciompi et al[26] (1992)	Soteria crisis hostel, Switzerland	Non-randomised quasi-experiment (not stated if retrospective) 6-week follow-up	Adults aged 17–35, recent onset (1 year) of DSM–III diagnosis of schizophrenia or similar, acutely ill, not drug or alcohol dependent, adherent with treatment *n* = 28 (14/14): unclear whether these form part of larger cohort subsequently reported[24]	1, 4	Low 2, 3
Rappaport et al[27] (1987)	45-bed crisis hostel, California, USA	Retrospective non-randomised cohort study Assessment at discharge	Adults assessed as requiring acute admission *n* = 203 (134/69) (clinically similar groups drawn from larger cohort)	1	Low 1, 2, 4
Bittle et al[28] (1986)	2 crisis hostels (10 bedded), Illinois, USA	Retrospective non-randomised cohort study 40-month follow-up	Adults requiring acute admission: exclusion criteria regarding previous admissions, high risk, comorbidity *n* = 4305 (594/3711)	2	Low 2, 3
Mosher & Menn[29] (1978) (Soteria study 1)	Soteria crisis hostel, California, USA	Prospective non-randomised (pseudo-randomised) quasi-experiment 2-year follow-up	Adults aged 16–30 requiring acute admission who: have diagnosis of schizophrenia, no more than one previous brief admission, are unmarried *n* = 79 (37/42)	1, 2	Low 1, 2, 4
Brook[30] (1973)	Crisis hostel, Denver, USA (time limited to 7 days)	Non-randomised cohort study (not specified if retrospective) 6-month follow-up	All adults requiring acute admission *n* = 98 (49/49)	1, 2	Low 2, 3
Goveia & Tutko[31] (1969)	Crisis hostel, California, USA	Prospective non-randomised quasi-experiment (some but not all participants randomised) 12-month follow-up	Adults assessed as requiring acute admission who are: adherent with treatment, not very acutely ill, ill due to reaction to environmental stressors, consenting to participate *n* = 98 (62/36)	1, 2, 3	Low 1, 2, 3, 4, 5

RCT, randomised controlled trial.
a. Domains: 1, improvement; 2, service use; 3, satisfaction; 4, cost.
b. Key to aspects of study quality: 1, analysis based on completer data not all intended to treat; 2, allocation concealment unclear (RCTs); not randomised (non-RCTs); 3, confounders (including severity of illness) not measured and if necessary adjusted for in analysis; 4, more than 40% of potential participants declined to participate or number not stated; 5, more than 40% participants lost at follow-up; 6, unspecified or previously unpublished outcome measure; 7, other.

Study reference	Selection bias	Allocation bias	Con-founders	Masking	Data collection	Drop-out	Analysis[b]	Intervention integrity[c]	Content of care measurement?[d]
Community-based studies									
Timko et al[17] (2006)	M	S	S	W	S	S	SS = No; ITT = No	E: yes; C: yes	4
Hawthorne et al[18] (2005)	M	S	S	W	S	S	SS = No; ITT = No	E: yes; C: not measured	0
Boardman et al[19] (1999)	M	M	S	W	S	S	SS = No; ITT = No	E: No; C: not measured	0
Fenton et al[20] (1998)	M	S	S	W	S	S	SS = No; ITT = No	E: yes; C: not measured	0
Mosher et al[21] (1995)	W	S	S	W	W	S	SS = No; ITT = No	E: No; C: No (medication use)	2 (medication use)
Polak & Kirby[22] (1976)	S	S	W	W	S	M	SS = No; ITT = No	E: no; C: not measured	0
Readhead et al[23] (2002)	M	W	W	W	S	S	SS = No; ITT: n/a[e]	E: yes; C: not measured	0
Hawthorne et al[24] (1999)	W	M	S	W	S	W	SS = No; ITT = No	E: yes; C: not measured	0
Ciompi et al[25] (1993)	W	M	W	W	S	S	SS = No; ITT = n/a[e]	E: yes; C: Not reported	2 (medication use)
Ciompi et al[26] (1992)	M	M	W	W	S	S	SS = No; ITT = n/a[e]	E: yes; C: not reported	2 (medication use)
Rappaport et al[27] (1987)	M	M	S	W	S	W	SS = No; ITT = No	E: Yes; C: not measured	2 (medication use)
Bittle et al[28] (1986)	M	M	W	W	S	S	SS = No; ITT = n/a[e]	E: yes; C: not measured	0
Mosher & Menn[29] (1978)	W	M	S	W	S	M	SS = No; ITT = No	E: yes; C: No (medication use)	2 (medication use)
Brook[22] (1973)	M	M	W	W	S	S	SS = No; ITT = n/a[e]	E: yes; C: not measured	0
Goveia & Tutko[26] (1969)	W	M	W	W	S	W	SS = No; ITT = No	E: yes; C: not measured	0
Time-limited services									
Olfson[32] (1990)	M	M	S	W	S	S	SS = No; ITT = n/a[e]	E: yes but 62.5% of experimental group also received control intervention; C: yes	4
Hirsch et al[33] (1979)	S	S	S	W	S	M	SS = No; ITT = No	E: yes; C: not measured	0
Herz et al[34] (1975)	S	S	S	W	S	W	SS = No; ITT = No	E: yes; C: not reported	4 (but results briefly reported)
Schneider & Ross[35] (1996)	S	M	W	W	S	M	SS = No; ITT = No	E: yes but 31% of experimental group also received control intervention; C: not measured	0
Ianzito et al[36] (1978)	S	M	W	W	W	S	SS = No; ITT = n/a[e]	E: yes but 46% of experimental group also received control intervention; C: not measured	0
Voineskos et al[37] (1972)	S	M	W	W	S	S	SS = No; ITT = n/a[e]	E: yes but 46% of experimental group also received control intervention; C: not measured	0
Mendel[38] (1966)	S	S	W	W	S	W	SS = No; ITT = No	E: yes; C: not measured	0
Services with a distinctive therapeutic model									
Berger et al[42] (2006)	W	W	W	W	S	W	SS = No; ITT = No	E: yes; C: no (individualised care plan)	1: % patients receiving an individualised care plan
Lafferty & Davidson[44] (2006)	S	W	W	W	M	S	SS = No; ITT = n/a – service level outcomes only	E: yes; C: not measured	0
Gordon et al[43] (2005)	S	M	W	W	M	S	SS = No; ITT = n/a – service level outcomes only	E: yes; C: not measured	0
Stevenson et al[45] (2002)	S	W	W	W	S	S	SS = No; ITT = n/a[e]	E: yes; C: yes	2: initial assessment and verbatim quotes in care plans
Dodds & Bowles[19] (2001)	S	W	W	W	S	S	SS = No; ITT = n/a[e]	E: yes; C: not measured	0

n/a, not applicable.
a. W, weak; M, moderate; S, strong.
b. SS, was a sample size calculation made and ITT was analysis based on intention-to-treat.
c. E, did at least 80% of participants receive the intervention?; C, was there consistency of intervention?
d. 0 = none, 1 = partially, alternative only, 2 = partially, both, 3 = fully, alternative only, 4 = fully, both.
e. No participants dropped out.

Table DS3 Results from studies of moderate or high quality

Study reference	Outcomes assessed[a]	Results
Community-based services		
Timko et al[17] (2006)	1. ASI: psychiatric subscale at 1-year follow-up 2. Length of index admission, in-patient and out-patient service use at 1 year 4. Health service costs at 1 year	Favours alternative: total out-patient visits (104 v. 130: $P < 0.001$), 1-year cost ($22 000 v. $33 000: $P = 0.002$) Favours standard service: length of index admission (26 v. 55 days: $P < 0.001$), 1-year total in-patient bed days (78 v. 86 days: $P < 0.01$) No significant difference: ASI psychiatric subscale score at 1 year
Hawthorne et al[18] (2005)	1. PANSS, SF–36V, ASI: psychiatric subscale (all at discharge and 2-month follow-up) 2. Number of readmissions at 2-month follow-up 3. POC at discharge 4. Cost of index admission and at 2-month follow-up	Favours alternative: discharge SF–36V ($P = 0.02$) and POC ($P = 0.05$) scores, cost of index admission ($P = 0.001$), homelessness ($P = 0.001$) at discharge No significant difference: discharge PANSS and ASI scores, PANSS, SF–36V, ASI scores, homelessness and number of readmissions at 2-month follow-up
Boardman et al[19] (1999) Haycox et al[57] (1999) provide costs and service use data	1. GAF, HoNOS, PSE, CAN, HRSD, SBS, LQLP (all at 12-month follow-up) 2. Length of index admission, bed use and % participants readmitted at 12-month follow-up 3. VSSS at 12-month follow-up 4. Costs at 12-month follow-up	Favours alternative: GAF ($P = 0.02$), HRSD ($P = 0.01$), PSE ($P = 0.001$), VSSS overall satisfaction ($P = 0.02$) No significant difference: HoNOS, SBS, CAN, length of index admission, number readmitted in 12-month follow-up, cost to all public services (although cost to NHS significantly higher at alternative services)
Fenton et al[20] (1998) Fenton et al[58] (2002) provide cost data	1. PANSS at discharge and 6 months 2. Length of index admission, % participants readmitted at 6-month follow-up 3. Unpublished 10-item satisfaction scale at discharge 4. Cost	Favours alternative: cost of index admission significantly less ($3046 v. $5549: effect size 0.78, $P < 0.001$) Favours standard service: length of index admission (12 v. 19 days: $P < 0.002$) No significant difference: PANSS scores, satisfaction, 6-month costs, cost-effectiveness
Mosher et al[21] (1995) [20] (Bola & Mosher[59] (2003) provide 2-year outcome data for a combined cohort of participants from the two Soteria US studies included in this review, but no separate data from each study)	1. 7-point measure of global improvement at 6-week follow-up	No significant difference
Polak & Kirby[22] (1976) (also reported by Brook et al[60] (1976))	1. Goal attainment system. Unspecified community adjustment scale, SDS (4-month follow-up) 3. TES: discharge and 4-month follow-up	Favours alternative: satisfaction: TES score (patient report) at discharge ($P < 0.001$) and 4-month follow up ($P < 0.01$) No significant difference: all measures of clinical improvement
Time-limited services		
Olfson[32] (1990)	1. BPRS, GAS (both at 3-month follow-up) 2. In-patient bed-days (3-month follow up)	No significant differences (only 3/8 participants discharged from brief-stay service within planned 5-day limit)
Hirsch et al[33] (1979)	1. PSE, PBAS (3-month follow-up) 2. Length of index admission, % participants readmitted and bed use over 1-year follow-up	No significant differences (median length of stay but not mean length significantly shorter at alternative)
Herz et al[34] (1975) Herz et al[61] (1977) provide 2 year follow-up data	1. PSS, GAS (over 3-month and 2-year follow-up) 2. Length of index admission, number of participants readmitted and in-patient bed days over 2-year follow-up	Favours alternative: length of index admission (9 days v. 50 days: no P stated); in-patient days over 2-year follow-up (47 v. 115: $P < 0.001$) No significant difference: PSS or GAS total scores at 3 months or 2 years, number of participants readmitted over 2-year follow-up

ASI, Addiction Severity Index; PANSS, Positive and Negative Symptom Scale; SF–36V, Health Survey – Short Form (Veterans Version); POC, Perceptions of Care Questionnaire; GAF, Global Assessment of Functioning; HoNOS, Health of the Nation Outcome Scale; PSE, Present State Examination; CAN, Camberwell Assessment of Need; HRSD, Hamilton Rating Scale for Depression; SBS, Social Behaviour Schedule; LQLP, Lancashire Quality of Life Profile; VSSS, Verona Service Satisfaction Scale; NHS, National Health Service; SDS, Jouard's Self-Disclosure Scale; TES, Treatment Effectiveness Scale; BPRS, Brief Psychiatric Rating Scale; GAS, Global Assessment Scale; PBAS, Patients' Behaviour Assessment Scale; PSS, Psychiatric Status Schedule.
a. Outcome domains: 1 = clinical improvement, 2 = service use, 3 = satisfaction, 4 = costs.

Table DS4 Data from moderate-quality studies potentially usable in meta-analyses

Study	Usable outcomes[a]	Unusable outcomes[b]
Community-based services		
Hawthorne et al[18] (2005)	Short term 1. PANSS 3. POC Medium term 1. PANSS, SF–36V (MCS) 2-month follow-up	Short term 1. SF–36V (MCS) (data skewed) 2. Length of index admission (data skewed) 4. Costs of index episode (data skewed) Medium term 2. Readmissions over 2-month follow-up (no *n* for individual arms: data given for number of participants on each arm admitted to alternative and hospital, but possibility that this includes double counting) Drug and alcohol use – ASI 2-month follow-up (not an outcome included in this review) Homelessness at 2-month follow-up (not an outcome in this review)
Boardman et al[19] (1999) Haycox et al[57] (1999) provide costs and service use data	Medium term 1. LQLP 12-month follow-up 2. Readmission in 12-month follow-up 3. VSSS 12-month follow-up	Short term 2. Length of index admission (no mean or s.d.) Medium term 1. GAF, HSRD, PSE, HoNOS, CAN, SBS 12-month follow-up (no *n* for individual arms) 2. Bed use 12-month follow-up (no mean or s.d.) 4. Costs over 12-month follow-up (no s.d.)
Fenton et al[20] (1998) Fenton et al[58] (2002) provide costs data	Short term 1. PANSS score, discharged to the community Medium term 1. Employed at 6-month follow-up 2. Days in hospital during 6-month follow-up, readmitted during 6-month follow-up, Number of readmissions during 6-month follow-up	Short term 2. Length of index admission (data skewed) 3. Unpublished measure 4. Costs of index admission (data skewed) Medium term 1. PANSS score at 6-month follow-up: no *n* for each arm 4. Costs at 6-month follow-up (data skewed) Homeless at follow-up, arrested during study period, number of social contacts (not outcomes in this review)
Timko et al[17] (2006)	None	Short term 2. Length of index admission (skewed data) Medium term 1. ASI psychiatric subscale at 1-year follow-up (skewed data) 2. Number of in-patient days at 1-year follow-up (no mean or s.d. for overall figure) 4. Costs over 1-year follow-up (skewed data) Out-patient service use over 1-year follow-up (not a review outcome) Drug and alcohol use – ASI total score (not a review outcome)
Mosher et al[21] (1995)	None	Short term 1. Measure of clinical improvement (Mosher et al 1971)[62] (no s.d.) Bola & Mosher[59] provide 2-year outcome data for a combined cohort of participants in the two Soteria studies identified in this review, but no separate data from each study[5]
Polak & Kirby[22] (1976) Also reported by Brook et al[60] (1976)	None	Short term 1. TES, Goal Attainment System, SDS (no s.d.), Communiy Adjustment Scale (unspecified measure) Medium term 1. TES, Goal Attainment System, SDS 4-month follow-up (no s.d.), Community Adjustment Scale (unspecified measure): 4-month follow-up
Time-limited services		
Hirsch et al[33] (1979)	Medium term 2. Number readmitted in 1 year from discharge	Short term 2. Length of index admission (no s.d.) Medium term 1. PBAS (not published measure), PSE (no s.d.) at 3-month follow-up 4. Costs at 3-month follow-up (no data provided)
Olfson et al[32] (1990)	None	Medium term 1. BPRS, GAS 3-month follow-up (no s.d.) 2. In-patient bed days within 3-month follow-up (skewed data)
Herz et al[34] (1975) Herz et al[61] (1977) provide 2-year follow-up data	None	Short term 2. Length of index admission (no s.d.) Medium term 1. GAS, PSS, MSER at 8-week and 2-year follow-up (no s.d.), employed at 6-month and 2-year follow-up (data only given for 'patients who ordinarily would have been expected to work': no *n* provided) 2. In-patient bed use at 3-month and 2-year follow-up (no s.d.), number of participants readmitted at 8-week and 2-year follow-up (unclear graph only: no *n* for each arm) Study has three arms: 3rd arm (day hospital + alternative residential excluded from this review)

PANSS, Positive and Negative Symptom Scale; POC, Perceptions of Care Questionnaire; SF–36V (MCS), Health Survey – Short Form (Veterans Version): mental component score; ASI, Addiction Severity Index; LQLP, Lancashire Quality of Life Profile; VSSS, Verona Service Satisfaction Scale; GAF, Global Assessment of Functioning; HRSD, Hamilton Rating Scale for Depression; PSE, Present State Examination; HoNOS, Health of the Nation Outcome Scale; CAN, Camberwell Assessment of Need; SBS, Social Behaviour Schedule; TES, Treatment Effectiveness Scale; SDS, Jouard's Self-Disclosure Scale; PBAS, Patients' Behaviour Assessment Scale; BPRS, Brief Psychiatric Rating Scale; GAS, Global Assessment Scale; PSS, Psychiatric Status Schedule; MSER, Mental State Examination Record.
a. Outcome domains: 1 = clinical improvement, 2 = service use, 3 = satisfaction, 4 = costs.
b. Unusable data includes: data from unpublished measures; data where more than 40% of participants at baseline were lost to follow-up; data where insufficient information was provided about sample size or spread; data with a high probability of skew (where standard deviation multiplied by two is greater than the mean).[62]

Additional references

57 Haycox A, Unsworth L, Allen K, Hodgson R, Lewis M, Boardman AP. North Staffordshire Community Beds Study: longitudinal evaluation of psychiatric in-patient units attached to community mental health centres. 2: Impact upon costs and resource use. *Br J Psychiatry* 1999; **175**: 79–86.

58 Fenton WS, Hoch JS, Herrell JM, Mosher L, Dixon L. Cost and cost-effectiveness of hospital *v.* residential crisis care for patients who have serious mental illness *Arch Gen Psychiatry* 2002; **59**: 357–64.

59 Bola JR, Mosher LR. Treatment of acute psychosis without neuroleptics: two-year outcomes from the Soteria project *J Nerv Ment Dis* 2003; **191**: 219–29.

60 Brook BD, Cortes M, March R, Sundberg-Sterling M. Community families: an alternative to psychiatric hospital intensive care. *Hosp Community Psychiatry* 1976; **27**: 195–7.

61 Herz MI, Endicott J, Spitzer RL. Brief hospitalization: a two year follow-up. *Am J Psychiatry* 1977; **134**: 502–7.

62 Mosher L, Pollin W, Stabnau J. Identical twins discordant for schizophrenia: neurological findings. *Arch Gen Psychiatry* 1971; **24**: 422–30.

63 Altman D, Bland J. Detecting skewness from summary information. *BMJ* 1996; **313**: 1200.