

Use of intensive case management to reduce time in hospital in people with severe mental illness: systematic review and meta-regression

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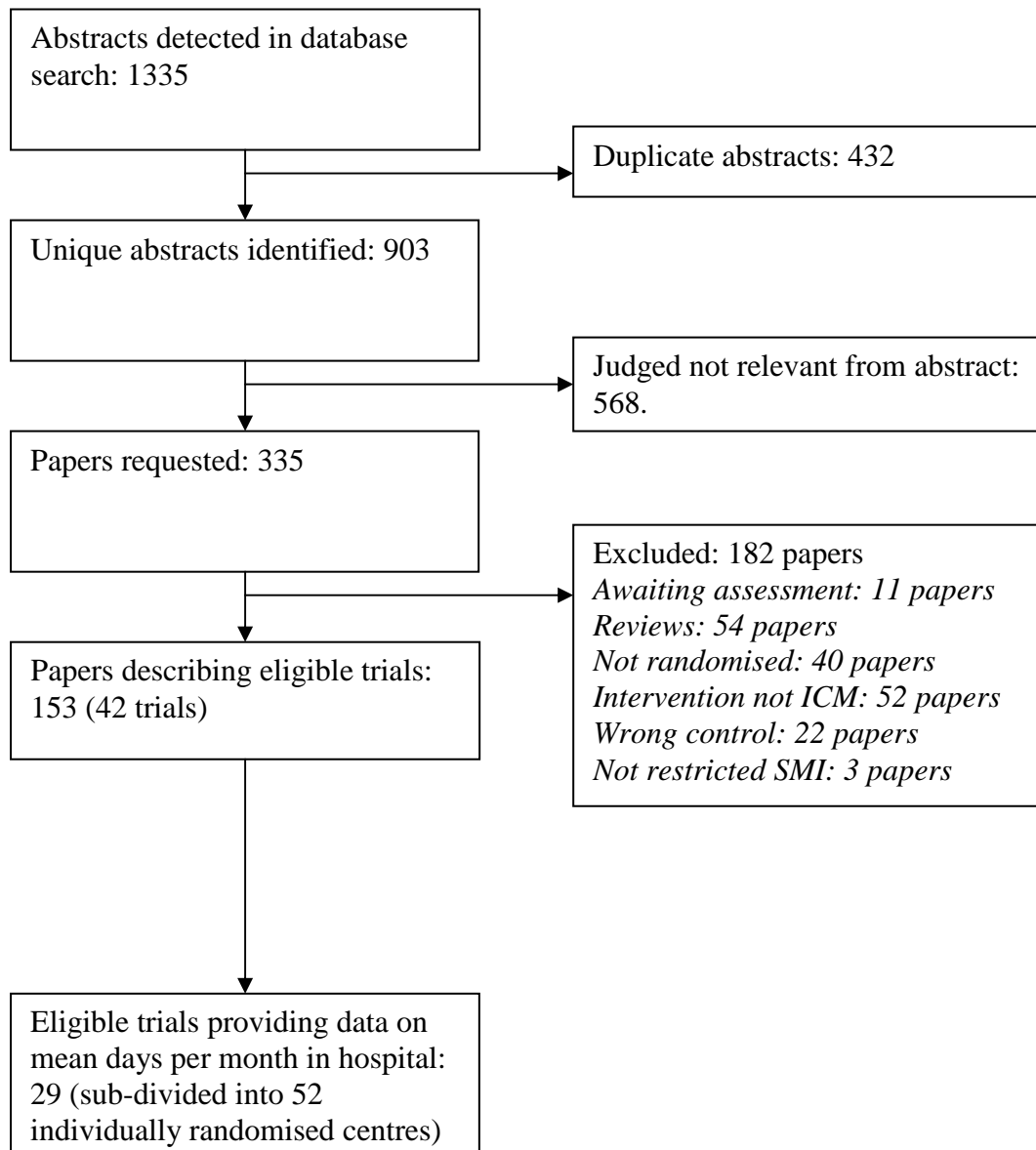
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Use of intensive case management to reduce time in hospital. Meta-analysis profile diagram (QOROM diagram).



Use of intensive case management to reduce time in hospital. Details of included trials.

Trial	Methods	Participants	Interventions
Audini et al, 1990 ^{w1}	Randomisation quality B. Follow up: 4, 15 ms. Attrition: 12.1%.	IC: SMI; been in preceding crisis intervention trial. Age (median) 37, F 54%, Scz 30%, EM 26%, PHosp 1.08.	ICM: N=33. IFACT: 6.7. CON: Standard psychiatric care, N=33.
Bjorkman et al, 1997 ^{w2}	Randomisation quality B. Follow up: 18, 36ms. Attrition: 0%.	IC: 18-55; SMI; problems in relationships, housing or work for >2yrs; no primary substance use. Age 37.1yrs, F 53.2%, Scz 51.9%, PHosp 5.63.	ICM: N=33. IFACT: 7.0. CON: Standard psychiatric care, N=44.
Bond et al, 1984 ^{w3}	Randomisation quality A (by sealed envelope). Follow up: 12 ms. Attrition: 6.8%.	IC: >18 yrs; scz-like disorder, aff disorder, severe pers disorder; lives locally; 3 admissions last 2 yrs; 5 admissions in life. Age:34.2yrs, F 43.3%, Scz 100%, EM 36.4%, PHosp 7.83.	ICM: N=45. IFACT: 6.0. CON: Standard care from drop-in center. N=43.
Bond et al, 1986 (3) ^{w4}	Randomisation quality B. Follow up: 6 ms. Attrition: 0%.	IC: >17yrs; psychotic; discharged state hosp past yr or hosp > 3 times past 2 yrs or at risk readmission, or awaiting commitment or admission with 4 admissions last 2 yrs. Age 34.5, F 38%, Scz 61%, EM 34%, PHosp 14.17, 4.95, 10.86.	ICM: N=84. IFACT: 9.2, 2.2, 7.4. CON: Standard psychiatric care (some brokerage case management). N=83.
Bush et al, 1983 ^{w5}	Randomisation quality B. Follow up: 12 ms. Attrition: 0%.	IC: SMI; high rate of recidivism; difficulties in community living. PHosp 3.99.	ICM: N=14. IFACT: 3.1. CON: Low intensity case management. N=14.
Chandler et al, 1988 (2) ^{w6}	Randomisation quality B. Follow up: 12 ms. Attrition: 1.6%.	IC: SMI; not caused substance use; functional impairment; eligible public assistance. Age: 37 yrs, F 48.5%, Scz 61%. EM 25.7%, PHosp 0.5, 1.14.	ICM: N=217. IFACT: 8.5, 6.6. CON: Standard psychiatric care. N=222.
COAST, 2000 ^{w7}	Randomisation quality A, (independent, by computer). Follow up 12ms. Attrition: 0%.	IC:18-65;1 st contact last 5 yrs; any functional psychosis. Age: 27.8, F 20.4%, Scz 83%. PHosp no data.	ICM: N=31. IFACT: 9.9. CON: Low intensity case management (CPA). N=27.
Curtis et al, 1984 ^{w8}	Randomisation quality B. Follow up: 35 - 52 ms. Attrition 0%	IC: awaiting discharge hosp; 18-54; no primary substance use or organic brain disorder; inpatient for >7 days and not eligible for 'community support program'. Age 36 yrs, F 59%, Scz 38%, EM 91%, PHosp no data.	ICM: N=147. IFACT: 5.8. CON: Standard psychiatric care. N=145.
Drake et al,1988 (7) ^{w9}	Randomisation quality A. Follow up: 6,12,18,24,30,36ms. Attrition: 15.2%.	IC: DSM-III-R schizophrenia, schizoaffective, bipolar and DSM-III-R substance user disorder; 18-60; no learning disability or med condition preventing participation. Age 34yrs, F 26%, Scz 76.3%, EM 4%. PHosp 2.88, 1.72, 3.02, 1.78, 2.76, 2.34, 4.1.	ICM (with substance use treatment): N=109. IFACT: 8.8, 3.5, 7.8, 8.5, 3.8, 5.0, 8.0. CON: Low intensity case management. N=114.
Essock et al, 1987 ^{w10}	Randomisation quality B. Follow up: 18 ms. Attrition: 0%.	IC: SMI; >2 admissions last 2 yrs or 1 admiss >180 days last 2 yrs or >2 contacts crisis last 2 yrs; homeless past yr or requiring supervision. Age: 41 yrs, F 36%, Scz 67%, PHosp no data.	ICM: N=130. IFACT: 8.5. CON: Low intensity case management. N=132.

Trial	Methods	Participants	Interventions
Ford et al, 1989 ^{w11}	Randomisation quality B. Follow up: 18 ms. Attrition: 0%.	IC: non-organic psychosis, and either recent admission, impaired soc function, problems in compliance or accepting care. Age: 46 yrs, F 53%, Scz 82%, EM 30%, PHosp 2.61.	ICM: N=39 IFACT: 4.8. CON: Standard psychiatric care. N= 38.
Hampton et al, 1988 (2) ^{w12}	Randomisation quality B. Follow up: 6 & 12 ms. Attrition: 0%.	IC: admitted state hospital; homeless on admission or at risk homelessness on discharge. Age: 37.3 yrs, F 23%, Scz 42.1%, EM 55.7%, PHosp 5.6, 5.2.	ICM: N=82. IFACT: 6.0, 5.0. CON: Standard psychiatric care. N=83.
Harrison-Read et al, 1995 ^{w13}	Randomisation quality B. Follow up: 12, 24ms. Attrition: 0%.	IC: heavy user of care over 6.5 yrs. Age: 39.1 yrs, F 47.2%, Scz 65.2%, EM 59.7%, PHosp 4.11.	ICM: N=97. IFACT: 7.6. CON: Low intensity case management (CPA). N=96.
Holloway et al, 1995 ^{w14}	Randomisation quality A (sealed envelope). Follow up: 9, 18ms. Attrition: 0%.	IC: 16-64 yrs; functional psychosis. Age: 34.8 yrs, F 34.3%, Scz 65.7%, EM 54.3%, PHosp 7.37.	ICM: N=35. IFACT: 9.3. CON: Standard care from CMHT. N=35.
Jerrell et al, 1991 (2) ^{w15†}	Randomisation quality B. Follow up: 6,12,18 ms. Attrition: 0%.	IC: SMI awaiting discharge; >2 admissions past yr or repeat crises; at least 3 of: poor work history, eligible public assistance, poor living skills or social support, or unacceptable behaviour. F 44%, Scz 75%, EM 28%, PHosp 2.85, 2.72	ICM(1): N=40 IFACT: 8.8. ICM(2): (Intensive Broker): N=42 IFACT: 4.0. CON: Standard care CMHT. N=40.
Johnston et al, 1994 ^{w16}	Randomisation quality B. Follow up: 12ms. Attrition: 6.8%.	IC: 16-70 yrs; scz or bipolar; at least 3 of: high relapse rate past 2 yrs, poor compliance, disturbed behaviour, frequent change housing, poor budgeting, low quality of life, difficulty coping; no primary substance use, organic disorder or learning disability. Age: 41.5 yrs F 43.1%, Scz 87.7%. PHosp 3.66.	ICM: N=36. IFACT: 7.3. CON: Low intensity case management. N=37.
Lehman et al, 1991 ^{w17}	Randomisation quality B. Follow up: 2,6,12 months. Attrition: 0.0%.	IC: homeless; SMI. Age: 37 yrs, F 33%, Scz 58.4%, EM 72%, PHosp no data.	ICM: N=77. IFACT: 11.0. CON: Standard care from CMHC (some low intensity case management). N=75.
LEO, 2000 ^{w18}	Randomisation quality A (sealed envelope). Follow up 18ms. Attrition: 0.0%	IC: 16-40; presenting first-episode non-affective psychosis or presented once then disengaged; no primary substance use or organic psychosis. Age: 26.3, F 35.4, Scz 100%, EM 68.8%, PHosp not applicable as first episode.	ICM: 69. IFACT: 10.5. CON: Low intensity case management (CPA). N=67.
Marshall et al, 1991 ^{w19}	Randomisation quality A (sealed envelope). Follow up: 7, 14 ms. Attrition: 0.0%.	IC: SMI; homeless or at risk of homelessness. Age: 47.5 yrs, F 15%, Scz 73.8%, EM 1.3%, PHosp no data.	ICM (social services case managers): N=40. IFACT: 4.9. CON: Standard care from CMHT. N=40.
McDonel et al, 1993 (2) ^{w20}	Randomisation quality B. Follow up: 6, 12, 24ms. Attrition: 18.7%.	IC: DSM-III-R diagnosis 295-301.99; one episode of intensive psychiatric care > 2 ms; impaired role functioning at least 2 yrs. Age: 40.2 yrs, F 57%, Scz 39%, EM 4%, Phosp 4.2, 1.16.	ICM (one site with Rhinelander model). N=98. IFACT: 4.2 IFACT Rhinelander: 4.4. CON: Low

Trial	Methods	Participants	Interventions
			intensity case management from CMHC. N=94
Muijen et al, 1989 ^{w21}	Randomisation quality B. Follow up: 6,12,18 ms. Attrition: 0%.	IC: 18-64yrs; scz or aff psychosis >2 years; >2 hospital admissions last 2 yrs; no organic disorder. Age 37 yrs, F 44%, Scz 83%, EM 23.1%, PHosp no data.	ICM: N=41. IFACT: 5.4. CON: community psychiatric nurses in primary care. N=41
Muller-Clemm et al, 1991 ^{w22}	Randomisation quality B. Follow up: 24ms. Attrition: 4.1%.	IC: SMI with impaired role functioning; 19-64 yrs; to be discharged from hospital; high risk of rehospitalisation; no primary substance use or organic disorder; no recent history of severe violence. F 50.4%, Scz 60.2%, PHosp 4.07.	ICM: N=63. IFACT: 6.2. CON: Standard care from CMHC. N=60.
OPUS, 1998 ^{w23}	Randomisation quality A (independent, centralized). Follow up: 12,24ms. Attrition: 0%.	IC: 18-45 yrs; scz-like disorder; no organic disorder or learning disability; Danish speaker; first-episode. Age: 26.6 yrs, F 41%, Scz 100%, PHosp not applicable as first episode.	ICM (plus family treatment): N=275. IFACT: 8.0. CON: CMHT (no case management). N=272.
Quinlivan et al, 1990 ^{w24}	Randomisation quality B. Follow up: 24ms. Attrition: 0%.	IC: 18+ yrs; DSM-III-R axis I disorder; 3+ hospitalisations last 2.5 yrs. Age 37 yrs, F 57%, Scz 70.0%, EM 40%, PHosp no data.	ICM: N=30. IFACT: 6.4. CON: public mental health system. N=30.
Rosenheck et al, 1987 (9) ^{w25}	Randomisation quality A, (independent, centralized). Follow up: 24 ms. Attrition: 0%.	IC: inpatient in VA psychiatric unit; no primary substance use or organic disorder; recent high user of psychiatric care. Age 47.6 yrs. F 0%, Scz 50.5%, EM 20.2%, PHosp 3.96, 5.83, 19.8, 4.19, 5.33, 3.22, 11.4, 11.4, 8.28.	ICM: N=410. IFACT: 6.0, 3.8, 7.7, 7.0, 6.4, 6.6, 8.4, 6.4, 5.8. CON: Standard VA care. N=376.
Salkever et al, 1989 ^{w26}	Randomisation quality B. Follow up: 18ms. Attrition: 16.8%.	IC: 18-65 yrs; DSM-III-R scz-like disorder or bipolar; high service use; probs with: compliance, independent living/self care; not needing 24hr supervision; no assaults past yr; PHosp 3.06.	ICM: N=104. IFACT: 7.0. CON: CMHC care (including low intensity case management). N=69.
Test et al, 1978 ^{w27}	Randomisation quality B. Follow up: 6,12,18,24 ms. Attrition: 7.4%.	IC: 18-30yrs; local resident; scz-like disorder; < 12 months in psychiatric & penal institutions. Age 23.1 yrs, F 32.8%, scz 100%, EM, 4.1%, PHosp 2.33.	ICM: N=75. IFACT: 8.5. CON: standard psychiatric care (including some low intensity case management) N=47.
Tyrer et al, 1990 ^{w28}	Randomisation quality A, (independent, random numbers). Follow up: 18 ms. Attrition: 3.6%.	IC: psychotic; contact with >2 parts of psychiatric service; >2 psychiatric admissions or persistent service use for >1 year. Age (median) 44yrs, F 45%, Scz 54%, PHosp no data.	ICM: N=200. IFACT: 3.4. CON: Standard psychiatric care. N=200.
UK700, 1994 (4) ^{w29}	Randomisation quality A (independent, centralized). Follow up: 12, 24ms. Attrition: 4.1%	IC: 18-65 yrs; psychotic >2 yrs; at least 2 previous admissions, one in past 2 yrs; no organic disorder or primary substance use. Age 38.2 yrs, F 42.9%, Scz 73.8%, EM 48.5%, PHosp 4.55, 4.66, 4.33, 4.59.	ICM: N=353. IFACT: 8.8, 4.5, 4.2, 8.5. CON: Low intensity case management (CPA). N=355.

Number in brackets following the name of a trial indicates the number of centers into which it was disaggregated for the meta-regression. Multi-center trials were only disaggregated when IFACT scores were different in the component centers; (b) † indicates a trial had more than one eligible treatment arm; (c) Abbreviations: IC = inclusion criteria, SMI = severe mental disorder, EM = ethnic minority, ICM = ICM (the intervention), CON = control, IFACT = total fidelity score (membership plus organisation, maximum 11.0) on IFACT scale, CMHT/CMHC = community mental health team/center; Scz = schizophrenia-like disorders (including schizoaffective disorders), PHosp = mean days per month in hospital before entering trial; (d) Attrition refers to number of participants not providing data on the hospital use outcome; (e) (CPA) = the Care Program Approach, a combination of low intensity case management and care from a CMHT, introduced in England in the mid-1990s and becoming standard care thereafter; (f) N refers to number of participants providing data, not the number entering the trial. (g) Quinlivan 1990 also included a low intensity case management control not included in the analysis

Use of intensive case management to reduce time in hospital. Web references

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**Use of intensive case management to reduce time in hospital
Sensitivity analysis - meta-regression based on treatment effect (days in hospital
per month) estimates including control group mean as a covariate (all trials)**

	Coefficient (days per month)	std error	95% lower	C.I. upper	p-value
Fidelity Score					
Staffing	-0.023	0.137	-0.292	0.246	0.868
Organization	-0.177	0.106	-0.384	0.030	0.095
Case management					
11-89% CM in control	-0.570	0.340	-1.236	0.097	0.094
At least 90% low intensity CM	0.008	0.291	-0.563	0.579	0.979
Trial size	0.001	0.001	0.000	0.002	0.110
Year (-1990)	0.077	0.040	-0.001	0.156	0.052
Country (1=US, 0=otherwise)	0.277	0.381	-0.470	1.024	0.467
Control Group Mean (days per month)	-0.440	0.064	-0.566	-0.314	<0.0001
Constant	1.055	0.425	0.222	1.889	0.013
Between Centre Variance	0.000				
Between Trial Variance	0.000				

Sensitivity analysis - meta-regression based of means for treatment group

	Coefficient (days per month)	std error	95% lower	C.I. upper	p-value
<u>Main Effect</u>					
Intervention	-0.657	0.412	-1.465	0.151	0.111
Fidelity Score					
Staffing	0.152	0.460	-0.749	1.054	0.74
Organization	0.522	0.316	-0.098	1.142	0.099
Case management					
11-89% CM in control	-1.676	1.111	-3.854	0.501	0.131
At least 90% low intensity CM	-1.386	1.120	-3.582	0.810	0.216
Trial size	0.002	0.004	-0.006	0.009	0.67
Year (-1990)	-0.073	0.135	-0.337	0.191	0.588
Country (1=US, 0=otherwise)	0.824	1.242	-1.609	3.258	0.507
Constant					
<u>Interactions with intervention</u>					
Fidelity Score					
Staffing	-0.017	0.206	-0.422	0.387	0.933
Organization	-0.474	0.154	-0.776	-0.172	0.002
Case management					
11-89% CM in control	0.198	0.493	-0.768	1.163	0.688
At least 90% low intensity CM	0.529	0.459	-0.371	1.428	0.250
Trial size	-0.001	0.001	-0.004	0.002	0.505
Year (-1990)	0.102	0.059	-0.013	0.217	0.082
Country (1=US, 0=otherwise)	-0.051	0.533	-1.096	0.994	0.924
<u>Random Effects</u>					
Between Centre					
within Trial					
Treatment	0.608				
Intercept	5.816				
Correlation	-0.942				
Control Group Effect*	-0.305				
Between Trial					
Treatment	0.011				
Intercept	0.808				
Correlation	-0.923				
Control Group Effect*	-0.108				

Sensitivity analyses excluding centres with imputed standard deviations.

	<i>Coefficient</i> <i>(days per month)</i>	<i>95%</i> <i>lower</i>	<i>C.I.</i> <i>upper</i>	<i>p-value</i>
<u>Without centres with imputed sd</u>				
Model table 3(a)				
Fidelity Score (Organisation)	-0.39	-0.82	0.05	0.08
Model table 3(b)				
Fidelity Score (Organisation)	-0.15	-0.53	0.23	0.44
Baseline mean Days per month	-0.16	-0.35	0.03	0.11
Model table 4				
Fidelity Score (Organisation)	-0.126	-0.472	0.220	0.475
Control group mean days per month	-0.427	-0.610	-0.245	<0.0001
Model table 5				
Fidelity Score (Organisation)	-0.400	-0.821	0.021	0.063
Control Group Effect*				
centre within study	0.326			
study	0.07			
<u>Without outlier (see figure 1a & 1b)</u>				
Model table 3(a)				
Fidelity Score (Organisation)	-0.450	-0.731	-0.170	0.002
Model table 3(b)				
Fidelity Score (Organisation)	-0.321	-0.607	-0.035	0.028
Baseline mean Days per month	-0.281	-0.438	-0.124	0.000
Model table 4				
Fidelity Score (Organisation)	-0.191	-0.399	0.016	0.071
Control group mean days per month	-0.530	-0.668	-0.392	<0.0001
Model table 5				
Fidelity Score (Organisation)	-0.474	-0.725	-0.222	<0.005
Control Group Effect*				
centre within study	-0.096			
study	0.002			

* This estimates the reduction in treatment effect for each unit reduction in the underlying admission rate in days per month