Details of included studies							
Study	**Participants**	**Recruitment, retention and attrition**	**Intervention/Comparator (description)**	**Frequency, Duration and Intensity of intervention.** **Length of Follow-up**	**Theoretical underpinning of intervention**	**Findings**	**Risk of bias (outcome level assessment –** See Additional File 4 for study level assessment)
Ciaranello 2006 (quasi-expieri-mental, non-equivalent comparator group)	**Sample:** 6 transitional housing facilities (I: 4, C: 2. Residents (I: ~200, C: ~50) randomly sampled at time points but not followed up individually) **Sex:** I: 81% male at baseline, C: 44% male at baseline **Age:** I: 41.6 (9.6), C: 41.3 (10.4) **Condition:** Various **Homeless definition:** Residents of transitional housing facilities, referred to as 'formerly homeless'.	Four transitional housing facilities selected from area in which intervention took place. Comparator was two transitional housing facilities in a different area, under control of a different authority. Residents were sampled at baseline and 6 and 18 month follow-up points, however follow-up surveys included residents who had arrived in the intervening period, owing to the usual length of stay of less than 9 months.	**I:** 'Integrated service team' (medical director, nurse practitioner, medical clerk and social worker) made weekly visits to housing facilities. Performed 'comprehensive health assessment', health education, medical and dental referrals, brief psychotherapy, diagnostic studies, and social work services. Supplemented by 24 hour a day nurse telephone-advice line. Additional HIV and TB clinics. **C:** 'Usual care'. Facilities under a different healthcare authority. No additional details given	Weekly visits and assessments 24 hour telephone advice service Service delivered for 2 years. Data collected by survey of residents at 6 and 18 months post initiation of intervention.	None described	**ED attendances (assessed by survey):** Significantly fewer residents in intervention facilities reporting ≥2 ED attendances in previous 6 months at compared with comparator group at 18 month follow-up (adjusted OR: 0.3, 95%CI 0.12 to 0.74). No significant difference at 6 month follow-up. **Hospitalisation (assessed by survey):** No significant difference in adjusted OR of having ≥1 hospitalisation in previous 6 months between intervention or comparator facilities at 6 or 18 months follow-up	**High:** Survey data susceptible to recall bias (e.g. for ED use). Follow-up surveys included people who had arrived in the facility between initial and follow-up surveys. As such changed in outcome variable could be the result of a different sample, rather than changes in outcome relating to the intervention. Also no blinding, randomisation, protection from contamination. Differences in baseline outcomes.
						Diastolic blood pressure: Adjusted mean lower in intervention group at 6 months (mean difference -6.4mmHg, SE 2.4, p=0.03) but not 18 months (mean difference 0.57mmHg, SE 2.3, p=0.80)	**High:** All biases above relalvant, particularly the inclusion of residents arriving between baseline and follow-up. Also unclear if participants were hypertensive as such validity of outcome measure is questionable
						Satisfaction with care: No significant differences described between intervention and control based on survey data. Not further described.	**High:** Biases above also relevant for satisfaction data
Hewett 2016 RCT	**Sample:** I: 206, C: 204 **Sex:** I: 81.6% male, C: 81.4% male **Age:** I: 41.6 (12.1), C: 42.5 (11.3) **Condition:** Various (79.1% and 76.5% had 'long-term medication condition' in I and C groups, respectively) **Homeless definition:**	1009 patients identified by ward team of whom 622 were eligible. 410 consented and were included in analysis. 3 month admission data routinely collected and was available for all 410. Survey data collected using telephone follow-up and was only obtained for 110 participants (57	**I:** During hospital admission patients who were homeless were identified by ward teams. Nurse met completes interview including medical, mental health, drug and alcohol details, housing history, care needs and consideration of any goals on discharge.3x weekly GP led ward round reviewing goals, care plans, medial findings and discharge planning. Regular visit by homelessness nurse to provide community links including with social work and	3-4 times weekly GP ward round during admission Initial meeting by nurse followed by liaising with relevant services. Weekly multiagency meetings Questionnaire data obtained 6 (+/-4) weeks following	None explicitly described. Development of service was the result of quality improvement work based in the study site which has been published and described	**ED attendance:** no significant difference between standard or enhanced care at 12 months (adjusted mean difference -0.8, 95% CI -4.3 to 2.8) **Hospital readmission:** No significant difference between standard or enhanced care at 30 or 90 days (adjusted OR 0.83 (95% CI 0.52 to 1.33) and 1.02 (95% CI 0.67 to 1.54), respectively)	**Low:** Data on readmission and attendance was routinely collected and complete data available for those who consented. Protection from contamination and adjustment for baseline imbalances made
						Quality of Life: (EQ-5D-5L questionnaire) Non-statistically significant improvement with enhanced	**Moderate:** Based on survey data with poor response to follow-up. Potential for

"Homeless" (i.e. no fixed residence)	intervention, 53 comparator). Consent to longer term follow up (1 year) was a change in protocol. Consent obtained from 226 participants).	housing services. Weekly multiagency meeting in which housing manager, social workers, drug and alcohol workers, liason psychiatry, street outreach workers, hostel key workers and ward staff met with 'pathway' team to review discharge plans for all patients. **C:** Visited once by homelessness nurse and given information leaflet detailing local services	discharge. Emergency department attendance assessed at 1 and 3 months, readmission at 3 months.		care over standard care at 6 week follow-up (adjusted mean difference 0.09 (95% CI -0.03 to 0.22) **Cost effectiveness:** £26,000 per quality adjusted life year	selection bias from those who responded to follow-up. **Moderate:** Based on survey data with poor response to follow-up.
Nyamathi 2006, Nyamathi 2007, Schumann 2007, Nyamathi 2008 RCT	**Sample:** I: 279, C: 241 **Sex:** 79.6% male **Age:** 41.5 (SD 8.5) **Condition:** Latent TB (a subset of these judged at risk of HIV also identified) **Homeless definition:** Individuals having spent the night prior to recruitment at one of the study shelters considered homeless and eligible for inclusion **Inclusion/exclusion:** Positive PPD without active TB and with no TB follow-up or prevention in previous 6 months	Recruitment by flyers in 12 homeless shelters. 3959 screened, 980 PPD positive. 25 refused CXR, 199 did not return for follow-up. 221 not eligible due to active TB, suspected TB or other medical indications. 520 randomised Follow-up data on 494	**I:** Delivered alongside Directly Observed Therapy (DOT) for latent TB. Research nurse and outreach worker delivered 8 1-hour TB education sessions. Focus was on self-esteem, TB and HIV risk, coping, self-management, problem solving and positive relationships and social networks to maintain behaviour change. Provided with community resourced and escorted to appointments. Participants not attending were tracked by the outreach worker. **C:** 20 minute lecture and 10 minute discussion with study nurse in addition to DOT.	8 1 hour sessions over a period of 6 months.	Comprehensive Health Seeking and Coping Paradigm.	**Completion of Directly Observed Therapy for Latent TB:** Nurse led case management with education, incentives and tracking associated with improved DOT completion (61.5% completion vs 39% with usual care, adjusted OR for completion 3.01 (95% CI 2.15 to 4.20). **TB knowledge:** Latent variable analysis showed nurse-led case management predicted greater TB knowledge at 6 month follow-up. **HIV knowledge/self-efficacy:** Latent variable analysis of subgroup at risk of HIV showed nurse-led case management predicted greater HIV knowledge and greater self-efficacy for condom use at 6 month follow-up.	**Low:** Complete outcome data available and adjusted for potential confounders in multivariate analysis. **Low:** two separate models used to control for numerous confounders and assess magnitude of the impact of inter intervention on knowledge.
O'Toole 2015 RCT	**Sample:** I: 123, C: 62 **Sex:** 94% male **Age:** 48.5 (SD 10.8) **Condition:** 72.7% reported at least one chronic medical problem, most commonly hypertension,	Recruitment from 11 community sites (soup kitchens, transitional and emergency shelters, drop-in centres). Potential participants identified in common areas and provided with information about the study. No healthcare services offered at time	**I: Group 1**, (n=39), personal health assessment/brief intervention. Nurse led interview about medical history, health, risk behaviours, barriers to care, medications and self-identified needs. Cursory examination. Brief motivational interview and summary of findings highlighting unmet health needs. No clinic orientation performed	Personal health assessment was a brief, one off, intervention. As described. Lasted 20-30 minutes. Clinic orientation also a one off intervention. 15-20 minutes. Also transport to clinic.	None described	**ED attendance:** no significant difference between groups (ANOVA p=0.61) **Medical hospital admission:** no significant difference between groups (ANOVA p=0.07) **Access to primary care:** Cox regression using usual care as baseline showed clinic orientation alone (HR 2.64 (95% CI 1.54 to 4.53)) and physical health assessment in	**Moderate:** Post-hoc analysis and very small number of events. High possibility of type 2 error. Randomised design, routinely collected data reduce potential bias. **Low:** Primary outcome with design focused on assessing outcome. Participants all eligible for veterans' services and data on usage routinely

	arthritis/chronic pain, hepatitis/cirrhosis **Homeless definition:** "lacking a fixed, regular and adequate night-time residence" plus eligible for Veterans Healthcare Services. Must have not been in receipt of primary healthcare services in previous 6 months	of recruitment. 221 enrolled, 36 removed as ineligible (6 duplicate enrolment, 15 not eligible for veterans' services, 14 receiving primary care in prev. 6 months, 1 did not adequately complete baseline assessment). Follow-up for re-interview was 81% at 1 month and 71% at 6 months.	**Group 2,** (n=40), clinic orientation, transported to clinic and introduced to clinic team. Orientated to services available. Usual care only following this. **Group 3,** (n=44), physical health assessment plus clinic orientation. **C:** Usual care, comprising social-worker administered assessment of homelessness and social needs, description of services available and how to access (verbal or written)	Follow-up at 1 and 6 months.		combination with clinic orientation (HR 3.41 (95% CI 2.02 to 5.76)) were both significantly associated with improved primary care access. Unadjusted Chi-squared estimates were significant at both 4-weeks and 6-months with usual care showing lowest rates of access.	collected and complete for eligible participants. Potential bias from randomisation procedure for clinic orientation arm as randomised by calendar day based on attendance.
Pilote 1996 RCT	**Sample:** I1: 83, I2: 82, C: 79 **Sex:** I1: 71% male, I2: 67% male, C: 66% male **Age:** Median: I1: 40, I2: 39, C: 40 **Condition:** Latent TB **Homeless definition:** "homeless", not further defined **Inclusion/exclusion:** Positive PPD without active TB and with no TB follow-up or prevention in previous 6 months	During a population based survey of TB and HIV, homeless people with positive purified protein derivative (PPD) were assessed approached for inclusion. 1608 interviewed, 1257 had skin tests and returned for evaluation. 441 PPD positive. 297 of these eligible (no recent follow-up). 244 agreed to participate.	**I1:** Monetary incentive. $5 incentive given on attendance to TB clinic follow-up in addition to appointment and bus tokens received by all participants. **I2:** Peer health advisors: In addition to bus tokens and appointment, peer health advisors met participants in shelters, accompanied to appointment, helped with paper-work and orientation. **C:** Usual care. Bus tokens and TB clinic appointment only.	One off payment for monetary incentive arm. One off intervention in peer health advisor arm, as described. Included transport assistance and support in attendance.	None described	**Attendance at initial TB clinic follow-up:** Monetary incentive (84%) and peer health advisor (75%) groups more likely to attend appointment than usual care (53%) (p=<0.001 and p=0.004, respectively). Both interventions significant predictors of adherence in multivariate analysis.	**Moderate:** Details of randomisation not clear and blinding not possible, otherwise low risk of bias.
Samet 2005 RCT	**Sample:** I: 74 (15 homeless), C: 77 (19 homeless) **Sex:** 84% male (homeless subset) **Age:** Median: 43.6 (37.9-45.0) (homeless subset) **Condition:** HIV	Participants were from a longditudinal cohort study (HIV Alcohol Longitudinal Cohort). Mostly recrtuied from Boston Medical Centre Clinic. Of 74 randomised to intervention, 56 received complete intervention, 13 received partial	**I:** ADHERE intervention: - Assessment and discussion of alcohol and substance use of readiness for behaviour change. - A watch that served as a medication timer reminder. - Enhancement of perceived efficacy of medications.	Baseline visit at medical centre lasting 60 minutes. Home visit within 3 weeks of intervention lasting 30-45 minutes. 1-month follow-up at assessment centre: 15-30 minutes.	Intervention used behavioural science theories using motivational interviewing to promote behaviour change and using principles of the Health Belief Model to support the benefit and need for therapy.	No separate analysis of homeless participants is provided in the published paper. Analyses were repeated on the homeless participants only using Generalised Estimating Equations as described in the original manuscript. Data were provided by the study authors and the analysis was performed by the review authors. Models were fit to analyse the overage intervention effect over time.	**Low:** Objective assessment of outcomes and adjustment for baseline variables

Study	Sample	Recruitment	Intervention/Comparator	Duration/Follow-up	Theory	Outcomes	Risk of bias
	Homeless definition: "homeless" as a variable – not otherwise defined **Inclusion/exclusion:** HIV positive participants with a history of alcohol problems (current or lifetime history of alcohol abuse or dependence – CAGE questionnaire or study clinician diagnosis). Participants also needed to be taking antiretroviral medication.	intervention, 5 received no intervention (could not be contacted). Homeless proportions of these numbers not available. 10 in total lost to follow-up (3 control, 7 intervention). Proportion of these who were homeless not stated.	- Individualised HIV counselling – ways to tailor medication use to specific circumstances. **C:** Standard care. At study period this included verbal or written instructions regarding antiretroviral treatment and adherence strategies.	3 month follow-up visit at medical centre: 15-30 minutes. At follow-up visits all 4 components of the intervention were reassessed and reinforced.		**Adherence to Antiretroviral treatment:** No significant improvement with intervention after controlling for baseline adherence (p=0.55)	
						CD4 count: No significant change in CD4 count with the intervention after adjusting for baseline CD4 count (p=0.31) **HIV1-RNA:** No significant reduction in viral load seen with intervention after adjusting for baseline laboratory estimates. (p=0.23)	**Low:** Objective assessment of outcomes and adjustment for baseline variables
Savage 2014 Randomised pilot/ feasibility study	**Sample:** I: 6, C: 3 **Sex:** Not specified **Age:** Not specified **Condition:** Type 2 diabetes mellitus **Homeless definition:** Those living without adequate shelter or in temporary accommodation.	Convenience sample recruited from a homeless clinic. Unclear how those with type 2 diabetes were identified. 9 identified in total for participation in feasibility study.	**I:** Nursing case-management with diabetes self-management. Education sessions delivered alongside nursing case-management (6 sessions total). **C:** No intervention	6 sessions over 12 weeks. Each 45 minutes long.	Chronic disease self-management approach based on self-efficacy theory.	**Self-efficacy:** paper states "participants who attended the intervention had higher scores on some outcome variables, most notable in cognitive symptom management, which improved from a pre-intervention score of 1.3/5 to a post-intervention score of 2.75". Participants in comparison stated to have "similar scores" at baseline and 12 week follow-up.	**High:** Randomisation not clear. Incomplete outcome reporting. No assessment of baseline imbalances. Small sample size, incomplete recruitment.
Tsai 2013, Tsai 2013, Grelotti 2016 RCT	**Sample:** I: 66, C: 71 **Sex:** I: 91% male, C: 89% male **Age:** I: 44 (37-53), C: 42 (37-49) **Condition:** HIV **Homeless definition:** "Homeless or marginally housed". Not further defined **Inclusion/exclusion:** HIV positive, depression (DSM-IV). Excluded if self-report of alternative	Participants identified from homeless shelters, free-lunch programmes, low-income single-room occupancy hotels, public HIV clinics and social service agencies. Block randomisation. 1555 screened. 647 potentially eligible. Of these 190 met DSM-IV criteria for depression.	**I:** Psychiatric evaluation and prescription of fluoxetine. Directly observed therapy for 24 weeks. Psychiatric interview was carried out weekly. 25 dollar reimbursement given per week for all doses. **C:** Advised of diagnosis of depression and advised to seek treatment at a public mental health clinic specialising in care of HIV positive persons. 25 dollar incentive for attending study site weekly for data collection.	Weekly dispensing and incentive. Weekly psychiatric evaluation. Follow-up 6 months.	None stated	**Adherence to antiretroviral therapy:** Mixed-model analysis showed no statistically significant effects of the intervention on antiretroviral therapy update (adjusted OR 1.18 (95% CI (0.83 to 1.68)). Percentage of antiretroviral adherence was similar in intervention and comparator groups.	**Moderate:** Low risk from study design however unannounced pill-counts on a monthly basis may not be a robust method of assessing compliance with treatment.
						HIV-1 viral load: No statistically significant difference in viral suppression between intervention and comparator group (adjusted OR 1.04 (95% CI 0.97 to 1.12).	**Low:** Good methodological rigour across study (Additional file 4) and objective measurement of outcome
						Depression: Improved mood in both study arms. Statiscially significant treatment effect observed using with Ham-D and BDI-II scores to assess depression.	**Low:** Good methodological rigour across study (Additional file 4). Assessed as primary outcome with analysis designed around this. Two measured used and compared

	psychiatric diagnosis.						as sensitivity analysis.
Tulsky 2000 RCT	**Sample:** I1: 43, I2: 37, C: 38 **Sex:** 89% male **Age:** Median 37 **Condition:** Latent TB **Homeless definition:** Either "literally homeless", staying in emergency shelter, street, car, or other shelter not designed for sleeping, or "maginally housed", staying in low-cost temporary accommodation. **Inclusion/exclusion:** Positive TST without active TB and with no TB follow-up or prevention in previous 6 months	Recruitment from emergency shelters, free meal lines and low cost residential hostels. Participants were interviewed and screened with a tuberculin skin testing (TST) using Mantoux method. Eligibility was positive TST and no TB follow-up in previous 6 months. 2158 screened. 618 positive TST. 89 refused randomisation. 199 ineligible as did not return or rsults, HIV infection, recent screening with chest x-ray or current isoniazid treatment. 330 randomised and attended clinic. Of these 121 prescribed isoniazid. 3 stopped due to toxicity. 118/121 analysed.	**I1:** Monetary incentive: $5 at each twice weekly visit for directly observed isoniazid. If a dose missed, attempts to contact participant made by letter or telephone call. Any onward referrals were made by TB clinic, not research assistants following up patients. **I2:** Peer health adviser: Adviser provided and observed isoniazid twice weekly. Adviser accompanied participant for monthly refill appointments. If appointments missed, adviser spent an allotted amount of time looking for the participant. **C:** Usual care: routine TB clinic care. Given 1 month supply of treatment and monthly drop in follow-up scheduled. Adherence monitored by TB charts. For non-attendance, standard follow-up or 3 letters or telephone calls. Treatment not directly observed. Protocol change during study due to low initial clinic attendance in usual care arm meant that the protocol was changed to offer all participants $5 at the initial visit.	Twice weekly attendance at TB clinic over 6 months in all participants. Interventions were on top of this, with the same frequency and duration. 6 month follow-up	None described	**Completion of 6 months isoniazid therapy:** Completion significantly higher in monetary incentive group (44%) than peer advisor (18%, p=0.01) and usual care (26%, p=0.04). No statistically significant difference between peer advisors and usual care. Multivariate analysis comparing monetary incentive to peer advisors and usual care considered together (i.e. single comparison group) showed monetary incentive arm significantly more likely to complete treatment (Adjusted OR 2.57 (95% CI 1.11 to 5.94)).	**Moderate:** Randomisation/allocation procedure not clear. Method of assessment of adherence to isoniazid differed between directly observed group and usual care (former directly observed, latter assessed by percentage pick up of prescriptions). If anything, however, this would lead to underestimation of the effect size of the intervention.

Tulsky 2004	Sample: I: 72, C: 69	Recruitment from emergency shelters, free meal lines and low cost residential hostels. Participants were interviewed and screened with a tuberculin skin testing (TST) using Mantoux method. 2570 tested. 647 positive TST, 488 new or required further screening. 95% accepted referral. 353 attended initial appointment. 212 of these were not randomised (190 not prescribed isoniazid, 6 active TB, 16 refused). 141 randomised. 16 not prescibred isoniazid after diagnostic tests (4 cash, 12 non-cash). 6 censored (3 cash, 3 non-cash).	I: Cash incentive: $5 payment for keeping twice weekly appointment for directly observed isoniazid therapy. Tracking included names and addresses of family, friends and case workers. Missed appointments were followed up by letters, telephone calls, and using tracking information, following a protocol specifying a number of outreach attempts. C: Non-cash incentive: A choice of fast-food or grocery coupons, phone cards or bus tokens with a value of $5 was offered from each kept appointment. Tracking and follow-up of missed appointment was identical to the cash incentive group.	Twice weekly attendance at TB clinic over 6 months in all participants. Interventions were on top of this, with the same frequency and duration. 6 month follow-up	None described	Completion of 6 months isoniazid therapy: Completion rates were 89% with monetary incentives and 81% with non-monetary incentives (no statistically significant difference, p=0.23)	Moderate: Randomisation/allocation procedure not clear. Method of assessment of adherence to isoniazid differed between directly observed group and usual care (former directly observed, latter assessed by percentage pick up of prescriptions). If anything, however, this would lead to underestimation of the effect size of the intervention.
RCT	**Sex:** 85% male **Age:** Median 41 (21-79) **LTC:** Latent TB **Condition Homeless definition:** "true homeless", street or shelter dwelling, or "marginally housed", staying in low-cost temporary accommodation **Inclusion/exclusion:** Positive TST without active TB and with no TB follow-up or prevention in previous 6 months						
Tyler 2014 Randomised quasi-experimental	**Sample:** I: 46, C: 61 (Hepatitis C positive subset only) **Sex:** 79% male **Age:** males 44 (7.1), females 45.3 (8.9) **Condition:** Hepatitis C **Homeless definition:** "homeless". Not further defined. **Inclusion/exclusion:** Recruitment was to a vaccine study (Hep A/B). Data presented here	Recruitment view flyers in homeless shelters within the study area.	I: Case management in the context of a hepatitis A/B vaccination programme. Three 40 minute group sessions delivered by study nurse with education on hepatitis A, B, C and HIV diagnosis, prevention and transmission. Self-management training. Case management focusing on self-esteem, social, behavioural and communication skills. Behavioural education around blood-borne virus risk. Also included participant needs assessment and onward referral to address medical, mental health, food, shelter and transportation needs.	Total of 3 group session across study period in intervention group. Time-frame not specifically stated. Outcomes assessed 6 months post-intervention	Based on the Comprehensive Health Seeking and Coping Paradign (CHSCP)	**Hepatitis C knowledge:** Measured using a modification of an 18 item tool initially developed for tuberculosis. Greater improvement in the nurse case-managed group than the standard intervention in the hepatitis C positive subset. Statistical analysis of the significance of the difference between intervention and control groups not performed for the hepatitis C positive subset.	**High:** Randomisation was carried out according to a protocol to assess the vaccine efficacy, not that of the case-management/education intervention. Futhermore, while data on the hepatitis C positive subset are presented, the study design and analysis was not focused on a comparison of intervention and control intervention in this subset of participants. As such baseline imbalances and sequence of allocation could introduce bias for the outcome of hepatitis C knowledge.

| | pertain to hepatitis C positive subset | | **C:** Single brief 20 minute presentation around hepatitis A, B, C and HIV at baseline visit of vaccination programme. | | | | |