A systematic review of interventions to increase the uptake of opiate substitution therapy in injecting drug users

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ABSTRACT

Background Opiate substitution therapy (OST) has multiple benefits and is a key component of overdose and blood-borne virus prevention in injecting drug users (IDUs). Interventions that can increase the uptake of OST and/or re-engage people in treatment could become an important component of harm reduction. A systematic literature review was conducted for studies of interventions designed to increase the uptake of OST.

Methods Searches were conducted using Medline, Embase, PsycInfo and CINAHL. We concentrated on an adult population in a community setting and English language studies.

Results Eighty nine studies were identified after filtering search results, of which, 14 met the inclusion criteria. Studies were broadly categorized into motivational interventions (MI), case management (CM) or mixed approaches. Meta-analysis was performed on six studies investigating MI and two studies investigating CM interventions. Individuals exposed to MI were 1.46 times more likely to enter treatment at follow-up (95% CI: 1.14–1.86, \( P = 0.003 \)) and individuals exposed to CM were 2.95 times more likely to be entering treatment at follow-up (95% CI: 2.08–4.17, \( P < 0.001 \)).

Conclusions There appears to be a promising effect for the use of both CM and MI approaches to increase the uptake of IDUs into treatment. Further investigation of these interventions is warranted.

Keywords public health, research, services

Background

Opiate substitution therapy (OST) is a key component of overdose prevention and blood-borne virus control in injecting drug users (IDUs) and is a highly cost-effective service.¹² The risk of death among heroin injectors is approximately 10 times higher than the general population, which OST can substantially reduce by 2–3-fold.³⁴ OST also substantially reduces the risk of HIV infection and emerging evidence suggests that OST can also reduce the risk of hepatitis C virus (HCV) by two thirds.⁶–⁸ In England and Wales approximately 200 000 people are infected with HCV, over 80% acquired through injecting, and about 50 000–100 000 infections among active injectors.² HCV prevalence is increasing, especially in young injectors.⁹ In Bristol and many other cities in the UK, one in two injectors has been infected with HCV.¹⁰ Primary prevention of HCV among active injectors is critical to the prevention of HCV in the population, but the current scale of intervention coverage is inadequate.¹¹ Moreover, because the background prevalence is so high, sustained and substantial reductions in injecting risk are required.¹² The number of injecting drug users in England and Wales is uncertain, with estimates varying from 120 000 to nearer 200 000—with approximately half receiving ongoing treatment.¹³–¹⁵

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Therefore, strategies that can increase the uptake of OST among needle/syringe exchange programme attendees and/or re-engage people who have recently dropped out of treatment are likely to increase the coverage of harm reduction interventions and could be an important component of a ‘comprehensive’ harm reduction strategy. The aim of this review is therefore to investigate the literature addressing interventions that have been successful in increasing the uptake of OST in IDUs in the community in order to consider their application and development.

**Methods**

Searches were conducted in the following databases using the NHS Health Information Resources website.

- Cochrane database of systematic reviews (issue 3, 2008),
- Medline (1950–September 2009),
- Embase (1960–September 2009),
- PsycInfo (1806–September 2009),

Details of search terms are contained in the Supplementary data. Inclusion criteria were for randomized controlled trials (RCTs) in adults who are IDUs in a community setting and who are currently out of treatment. Outcome was treatment entry to OST, details of the types of treatments where available are described in the Supplementary data. Studies were excluded if a non-RCT design or if the outcome was treatment retention or adherence to treatment (i.e. if patients had already entered treatment or were completing treatment at time of randomization). Studies were also excluded if the intervention was purely contingency based (such as supplying free treatment vouchers) as this is not an appropriate intervention in the context of all healthcare systems.

Searches were limited to English language studies. Titles and abstracts were screened for relevance and full copies of studies were obtained for application of inclusion and exclusion criteria. Bibliographies of included studies were checked for any additional references. The Revman software package (Version 5.0, Cochrane Collaboration 2008) was used to perform a meta-analysis of studies with comparable interventions and outcome measures. Fixed effects analysis was used in the absence of statistically significant heterogeneity between studies as assessed by the chi-square test for heterogeneity and $I^2$ statistic.

Study quality was not formally assessed with a scoring system. A more detailed description of studies including follow-up times is contained in the Supplementary data.

Due to the potential for bias if clients more likely to enter treatment are selected for the intervention group only randomized trials were included. Randomization methods were not described apart from in two studies that described a simple random sequence approach \(^{16,17}\) and where one study used a cross-over design. \(^{18}\) Most studies compared baseline characteristics to demonstrate effective randomization and balance of confounding factors. Blinding of participants is not possible with the interventions used. Losses to follow-up were minimal as a result of short follow-up times needed for the outcome (treatment entry) to occur and the fact the outcome was assessed by record linkage. Treatment fidelity was assessed formally in two studies \(^{19,20}\) by observing the intervention in a select sample, other studies simply recorded the number of sessions, length of sessions and attendance to compare with protocols. \(^{18,21,22,23}\)

Overall study quality was deemed to be fair given the nature of the interventions and difficult client group.

**Results**

One thousand six hundred and seven studies were identified, of which, 14 met the inclusion criteria after initial screening and review of 89 full articles (Fig. 1). The studies were broadly categorized into interventions that predominantly contained a motivational aspect, such as outreach counselling and motivational interviewing (MI), interventions involving case management (CM) such as brokerage, generalist/intensive, assertive community treatment, clinical CM or strengths-based CM and interventions that had a mixture of both CM but with a strong motivational aspect (details of interventions are shown in Table 1).

**Motivational interventions**

Seven RCT studies \(^{19–25}\) investigated an MI; two studies used a cognitive behavioural therapy approach based on the matrix model \(^{21,22}\); two based on the Miller model \(^{19,20}\); two stages of change \(^{23,25}\) and one study based on a manual developed for the study. \(^{24}\) Sample sizes ranged from 175 to 2973 and recruitment varied from outreach workers, via needle exchange or by using targeted advertising and peer advocates. Six studies contained sufficient detail to be included in a meta-analysis \(^{19–24}\). Combined data were available for 3938 clients with 762 in the intervention and 3176 in the standard referral group. The uptake with standard referral was 10.2% compared with 30.2% in the intervention group. The weighted odds ratio (OR) for the effect estimate is 1.46 (95% CI: 1.14–1.86, \(P = 0.003\)) meaning clients receiving an MI were 1.46 times more likely to enter treatment than those who followed a standard referral pathway (Fig. 2).
In studies where an incentive (free treatment voucher or other) was given in addition to the intervention or control group (i.e. was deemed an additional intervention),23,24 data were used for the group not receiving the free incentive and compared to the corresponding standard referral without incentive group. Some studies gave minor compensation for attending baseline or follow-up interviews assessments such as cash or food vouchers, although these incentives may have affected the likelihood of attending interviews they were not deemed to be an additional intervention in the manner of free treatment vouchers.

**Case management**

Three RCT studies18,26,27 and data contained in a Cochrane review28 were identified investigating CM approaches to treatment entry. Of the RCT studies, two18,26 were based on a published strengths based CM model29 and one study used a protocol developed by the authors.27 Previously unpublished raw data were contained in a meta-analysis in a Cochrane review28 and although details of the intervention are not available, the data were able to be combined with the study by Strathdee et al.18 in a meta-analysis. The combined sample size is 627 with 318 in the intervention and 309 in the standard referral group. Uptake with standard referral was 41.4% compared with 64.2% in the intervention group. The weighted OR is 2.95 (95% CI: 2.08–4.17), demonstrating that individuals in the intervention group are 2.95 times more likely to have entered treatment at the end of follow-up compared with those following a standard referral pathway (Fig. 3).

**Mixed interventions**

Three studies16,17,30 were identified that did not fit clearly with the previous categories as they contained elements of both motivational and CM or other approaches (Table 1, further details in the Supplementary data). Two studies16,17 provided CM but with specific detail of motivating clients to participate in treatment. Both investigated treatment re-entry in those out of treatment and demonstrated a positive finding. Coviello et al.16 report in 128 clients that 29% of the intervention group and 8% of the comparator had re-entered treatment at follow-up (OR: 5.8; 95% CI: 1.6–20.8). Zanis et al.17 in a small study of 41 clients report that 63% of the intervention compared with 7% of the comparator had re-enrolled in treatment post-intervention; this however was based on small numbers of participants.

One study used the Miller method31 of MI but also offered assistance from a case manager to aid completing the intervention.30 This study enrolled 440 HIV patients and reports 44.7% of the intervention group and 30.4% of the comparator group entered treatment at 6 months follow-up (OR: 1.85; 95% CI: 1.50–2.74).
Table 1 Overview of interventions in the included studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
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<tbody>
<tr>
<td>Booth et al.</td>
<td>1. Two sessions of manual driven HIV pre-test and post-test counselling. Based on cue cards and risk behaviour and passive referral (given information on other agencies in the area). Modest fee paid for attendance to baseline and follow-up interviews.</td>
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<tr>
<td></td>
<td>1. Risk reduction based on the indigenous leader outreach model, but staff not former drug users. Centred on modification of risk behaviours. 2. Motivational interviews based on stages of change model. Combination of role-induction techniques and motivational interviewing. Aim was for five sessions attended. $40 intake fee waived. Free treatment vouchers valid for 90 days.</td>
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<tr>
<td>Coviello et al.</td>
<td>Outreach case management. Six weeks manual based intervention to motivate treatment re-entry. Engage patients in treatment, identify services, motivate and provide brief problem solving strategies. 45 min initial assessment followed by telephone interviews.</td>
</tr>
<tr>
<td>Goldstein et al.</td>
<td>1. Contact with outreach workers for 1 month (at least one contact per week). 2. CBT based on matrix model available 4 days a week for 3 months. 3. Individual counselling and needs assessment. $15 compensation for baseline interview and $20 for follow-up.</td>
</tr>
<tr>
<td>Havens et al.</td>
<td>Strengths-based case management based on Rapp et al. method. Engagement, strengths assessment, personal case planning, resource acquisition. Time spent with each participant recorded (median 25 min).</td>
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<tr>
<td>Kidorf et al.</td>
<td>1. Motivational interviewing based on the Miller method. 50 min intervention in two phases. First phase positive and negative aspects of drug use, second phase elicited participants response. Paid $15/h for study assessments and $25 for intervention participation.</td>
</tr>
<tr>
<td>Kidorf et al.</td>
<td>Motivational based on the Miller method to assess treatment readiness what to expect in treatment, finding treatment and utilizing harm reduction strategies. Eight 1 h sessions of individual motivational enhancement, two per week over the first 2 months, treatment in mobile van unit. 16, 1 h treatment readiness sessions, two per week over the first 4 months, treatment at addiction centre. Information given on addresses of treatment programmes, treatment request lines, community resources and needle exchange locations. Treatment incentives were $10 cash, $10 McDonalds vouchers and $3 bus pass, in addition to $50 for entering treatment.</td>
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<tr>
<td>Mejta et al.</td>
<td>Case management over a longer time period (3 years). Based on protocol developed by authors. Offering support to identify substance abuse patterns, problems and consequences of substance abuse and barriers to entering treatment. Case manager remains engaged during treatment admission process.</td>
</tr>
<tr>
<td>Robles et al.</td>
<td>Motivational intervention based on the Miller model. Six counselling sessions conducted by a registered nurse and offered assistance from a case manager to address problems with completing intervention. 1. Involve the participant in the decision process for change by expressing sympathy and understanding. 2. Explore discrepancies to reduce ambivalence towards drug treatment, healthcare utilization and HIV risk behaviour change. 3. Prevent argumentation (resistance to change). 4. Development of self-efficacy in the behaviours addressed 5–6. Encouragement and recognition of progress Participants paid $20 for attendance at baseline and follow-up interviews.</td>
</tr>
<tr>
<td>Rosenblum et al.</td>
<td>1. Service outreach and recovery—group counselling 12 sessions delivered over 4 weeks manual driven group interviewing. Motivational enhancement for recovery—provided information on 12-step and other substance abuse programmes in the community and utilised the stages of change model. 2. Education and skills for recovery. 26 sessions of CBT delivered over 12 weeks. Building skills for relapse prevention following a matrix model. $15 for baseline interview and $20 for follow-up. Food coupons and vouchers for session attendance, prizes given at a raffle for ‘graduates’ of programme, $5 food voucher for proof of attendance at 12-step or other programme.</td>
</tr>
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Continued
These studies were not combined in a meta-analysis due to heterogeneity in the delivery of interventions.

Factors linked to treatment entry

Seven studies investigated factors that were associated with increased likelihood of treatment entry. These studies were not combined in a meta-analysis due to heterogeneity in the delivery of interventions.

Factors linked to treatment entry

Goldstein et al. found treatment entry in those attending two or more sessions was 72% compared with 53% in those attending 0–1 session and 50% in those not attending any sessions. Havens et al. showed that those spending more than 25 min were 3.51 times more likely than those spending less.
spending less than 5 min with a case manager to enter treatment (although this was associated with some uncertainty 95% CI: 1.04–11.9). Booth et al.23 found using a regression model that exposure to sessions predicted treatment entry, but also that entry was more likely where cocaine was not also being injected, where prior treatment had been undertaken and was related to desire for treatment.23 Covello et al.16 found the influence of other drug users, stigma and satisfaction with the counsellor important barriers to treatment entry. As studies were mainly from the USA, offering free treatment did increase entry.30 Provision of transport (having a car or being driven) was shown to affect likelihood of attendance in one study.18

Discussion

Main findings of this study
We identified fourteen studies that investigated interventions designed to increase the uptake of OST. These focused on CM or MI approaches with other variations for example of the matrix model for behavioural interventions.29,31,32 These interventions seem to have a positive effect, with meta-analysis suggesting that MI and CM interventions increased the uptake of OST by 46% and 3-fold, respectively.

What is already known on this topic
Opportunistic brief interventions focused on motivation such as cognitive behavioural therapy and behavioural couple’s therapy to encourage abstinence are recommended by NICE in the UK.33 Currently, there is no guidance on interventions for increasing the uptake of treatment in substance-dependent individuals—which could be an important component of strategies to reduce drug-related harm.

What this study adds
The results of this review suggest there is a promising affect for CM and MI approaches in engaging out of treatment IDUs to enter OST. However, further studies are required in order to strengthen the evidence base and demonstrate that these interventions can be effective outside the USA.

Limitations of this study
Despite some variability in the delivery of the interventions—such as number of sessions offered and duration of sessions, there was little evidence of heterogeneity in the intervention effect at least for MI studies, whereas other reviews of substance abuse interventions have noted high levels of heterogeneity.28 A key limitation is that the evidence is largely based on US studies including one study in Puerto Rico,30 for example treatment entry in this setting may be influenced by a number of factors such as the availability of alternatives including buprenorphine. Moreover, though we excluded studies offering free treatment incentives such as vouchers as not relevant to all settings, most studies did offer a modest incentive for participation in baseline and follow-up interviews, which may or may not be a key component of the intervention. We only searched for English language studies, it is possible that studies have been conducted and published in other languages that contain relevant information, which would have added to this evidence review. We were not able to formally assess the potential for publication bias due to the small number of studies in each category. It is possible also that we have missed some relevant studies that did not clearly identify treatment entry as an outcome; for example, where a study has a primary outcome of retention or adherence to treatment or enhancing further treatment following detoxification but also assesses treatment entry. We attempted to review the full text of identified relevant studies where possible and a full list of excluded studies and reasons for exclusion can be obtained from the authors.

Supplementary data
Supplementary data are available at the Journal of Public Health online.

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References


