A cost-effectiveness analysis of buprenorphine-assisted heroin withdrawal

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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Detoxification from heroin using buprenorphine in a specialist clinic versus a shared care setting was assessed. The intervention comprised a 5-day detoxification programme in which patients received a supervised dose of buprenorphine (6 mg on day 1, 8 - 10 mg on day 2, 8 - 12 mg on day 3, 6 - 10 mg on day 4, and 4 mg on day 5) and had a brief, structured interview on a daily basis. The specialist clinic was a community-based treatment agency. The shared care model involved general practitioners (GPs) who dispensed the medication and provided additional care during the week, supplemented by weekend attendance and further counselling at the specialist clinic. All GPs were experienced in treating opioid-dependent individuals but had no prior experience of using buprenorphine.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised opioid-dependent individuals aged 16 to 65 years who were seeking ambulatory detoxification. To be included in the study, the individuals needed to have stable accommodation within a 6-km radius of the clinic. The exclusion criteria included pregnancy or lactation, concomitant dependence on benzodiazepines or alcohol, and methadone treatment within the last 2 months. Also excluded were those with unstable medical or psychiatric conditions (including active psychosis and depression with significant suicide risk).

Setting
The study examined two different settings providing buprenorphine-assisted detoxification from heroin. More specifically, a community-based specialist setting and a shared care setting (primary and specialist care). The study was conducted in Sydney, Australia.

Dates to which data relate
The effectiveness and resource use data related to 2000 to 2001. The price year was not reported, but it was likely to have referred to the same time period.

Source of effectiveness data
The effectiveness data were derived from a single study.

Link between effectiveness and cost data
The costing associated with the specialist clinic was carried out retrospectively. Both prospective and retrospective costings were probably performed in the shared care setting, depending on the different types of resources used. The
costing was undertaken on the same study sample as that participating in the clinical study. However, the resource use data were collected for every second (consecutive) patient randomised in each group, and subsequently extrapolated to estimate the costs for those patients for whom actual data were not collected.

Study sample
No power calculations were reported. A total of 141 prospective patients seeking ambulatory detoxification were screened, with a final 115 being randomly allocated to treatment in a specialist clinic (n=59) or shared care (n=56). There was no evidence to show that the initial study sample was appropriate for the clinical study question. More details on the trial protocol were given in an earlier study (Gibson et al. 2003, see ‘Other Publications of Related Interest’ below for bibliographic details).

Study design
The study was a randomised controlled trial (RCT). The NH&MRC Clinical Trials Centre randomisation service randomised the patients to the two groups. The specialist clinic was located in inner city Sidney, while the shared care model involved 6 GPs located within a 5-km radius of the clinic. No blinding of the outcome assessment was reported. The patients were followed-up for 8 days (withdrawal period) since the beginning of the trial. Patients who failed to attend their first (day 1) appointment or missed 2 consecutive days during detoxification were deemed to have discontinued treatment. Overall, 46 (78%) of the 59 clinic patients and 40 (71%) of the 56 shared care patients completed treatment.

Analysis of effectiveness
Although not stated clearly, the analysis was conducted on an intention to treat basis. The primary health outcome was the proportion of each group that completed detoxification and achieved an initial 8-day period of abstinence. Abstinence outcomes were based on participants’ self-report, as self-reports of heroin use had been found to be valid for evaluating treatments. Additional outcome measures were collected and reported in the earlier paper (Gibson et al. 2003). The groups were found to be comparable at baseline in terms of their demographic characteristics and the number of treatment experiences. However, patients in the clinic patients had a significantly lower baseline heroin use than those in the shared care group, (p=0.039). No adjustments for potential confounding factors were reported.

Effectiveness results
A total of 13 (22.0%) of the 59 clinic patients and 13 (23.2%) of the 56 shared care patients reported no opiate use during the withdrawal period (8 days).

Clinical conclusions
The two programmes providing buprenorphine-assisted detoxification from heroin (specialist clinic and shared care) were equally effective.

Measure of benefits used in the economic analysis
As the outcomes results suggested that both interventions were similar, the analysis should be considered a cost-minimisation analysis.

Direct costs
The costs comprised health service costs. These included the costs of staff time (patient contact and preparation time), diagnostic procedures and medication (drugs and dispensing/dosing staff time), and costs associated with general facilities (supplies, consumables, capital, equipment, ancillary support including administration, management, security, etc). The unit costs and the quantities were not analysed separately. Resource use was based on actual data, derived from clinical and pharmacy records, staff questionnaires, and sources such as financial accounts and, asset registers, in order to cost general facilities. The unit costs were based on staff salaries, standard government charges, and other
national sources regarding capital and operating costs. Resource use related to a period between May 2000 and May 2001. The price year was not reported, but it was possibly 2000 to 2001. Discounting was not undertaken since the costs per patient were incurred during a very short time (equal to 8 days).

Statistical analysis of costs
The costs were treated stochastically. The mean costs between groups were compared using a t-test for independent samples.

Indirect Costs
The indirect costs were not included in the analysis.

Currency
Australian dollars (Aus$).

Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.

Cost results
The total cost of treatment for the duration of the treatment regimen (i.e. 8 days) was $19,926 in the shared care group versus $19,593 in the specialist clinic group. This resulted in an average cost of $356 per patient in the shared care group versus $332 per patient in the specialist clinic group.

Treatment in the shared care setting was $24 more expensive per patient than treatment at the clinic, (p<0.05). Potential knock-on costs were not dealt with in the costing of the interventions.

Synthesis of costs and benefits
Shared care was shown to be more expensive than specialist clinic care, but the two models of care were shown to be equally effective. However, the costs and benefits were further combined in the form of an incremental cost-effectiveness ratio (ICER), expressing the difference in costs between the two groups over the difference in outcomes. The ICER of shared care versus specialist clinic was $20 per 1% improvement in outcome.

Authors' conclusions
Buprenorphine treatment of heroin dependence in a shared care setting was a cost-effective alternative to treatment in a specialist clinic. In the abstract, the authors concluded that the two interventions were equally cost-effective.

CRD COMMENTARY - Selection of comparators
It was reported that the specialist clinic represented standard care. Therefore, it was selected as the comparator to shared care (the new intervention). You should decide whether the comparator reflects routine care in your own setting.

Validity of estimate of measure of effectiveness
The estimate of effectiveness was based on an RCT, which is the 'gold' standard method for estimating effectiveness. Details of the methods used to select the patients and the length of the study were given. However, blinding of the
outcome assessment was not reported. The study sample was likely to have been representative of the patient population. The patients were comparable at baseline in terms of their demographic characteristics and the number of treatment experiences. However, the two groups differed significantly in terms of baseline heroine use, (p=0.039). No statistical analyses were undertaken to account for potential biases and confounding factors. The main drawback of the effectiveness analysis was the absence of power calculations in determining the sample size. If the sample size was too small, the study would not be sufficiently powered to detect meaningful differences in outcomes between the two groups. In addition, it would appear that no statistical analysis was conducted to compare the health outcome between the two groups.

Validity of estimate of measure of benefit
The estimation of benefits was obtained directly from the effectiveness analysis. The authors acknowledged that the choice of primary outcome used in the economic analysis might be contentious since such a measure was relatively unstable and held little clinical relevance. However, they stated that the use of abstinence did provide a useful metric from which to compare the interventions assessed. The two interventions were shown to be equally effective, although no statistically analysis was conducted. Nevertheless, the benefits were further incorporated in an incremental analysis of the costs and benefits.

Validity of estimate of costs
All the categories of cost relevant to the perspective adopted were included in the analysis. It was acknowledged that there might have been ancillary costs, such as counselling obtained outside the settings assessed, which might not have been captured. However, the authors estimated that, if this was the case, this was most likely for patients treated in the shared care setting, thus widening the cost differential further. The costs and the quantities were not reported separately, which limits the reproducibility of the results. The collection of retrospective resource use data on less than 100% of the patients was reported as a limitation of the analysis, as patients whose resource intensity varied from the norm might have been missed. A statistical analysis of the costs was performed. Discounting was not undertaken, but this was not necessary as the costs were incurred during 8 days. The price year was unclear and this hinders the generalisability of the results.

Other issues
The authors compared the effectiveness results of their study with those from another study and found them to be consistent. The issue of generalisability to other settings was not addressed. The results of the study were adequately reported. However, the authors’ conclusion that the two interventions were equally cost-effective was not inferred from the results of the analysis: the two interventions were demonstrated to be equally effective, but the shared care model was significantly more costly. In addition, the incremental analysis showed that shared care incurred an additional cost of $2,000 per additional patient achieving 8-day abstinence. Therefore, the comparator (i.e. the specialist clinic) was the most cost-effective option. The authors reported a number of further limitations of their study, which have been highlighted in preceding sections.

Implications of the study
The authors highlighted the need for engaging a significant proportion of patients in effective post-withdrawal treatment, as this would increase the health returns from investing in detoxification services which would otherwise be small. They defined the goal of treating heroin dependency as keeping heroin users in treatment for as long as possible. A shared care arrangement was proposed as an alternative method of providing buprenorphine-assisted detoxification from heroin. However, the authors suggested that more consideration should be given to the question why many GPs seemed reluctant to become involved in the treatment of opioid dependency, especially since training programmes for the delivery of buprenorphine in primary care had recently been developed.

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Other publications of related interest

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MeSH
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