



Staff concerns in heroin-assisted treatment centres

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Accessible summary

- For some heroin addicts, heroin-assisted treatment is more efficacious than methadone treatment.
- Seven European countries have implemented outpatient centres where patients self-administer pharmaceutical heroin under close supervision.
- Nurses deliver pharmaceutical heroin and supervise administration. The two main concerns are overdosing and smuggling.
- Nurses are convinced of the utility of this treatment for severe heroin addicts.

Abstract

Heroin-assisted treatment (HAT) is a solution for improving the condition of treatment-resistant heroin addicts. Since 1994, six randomized controlled trials have concluded that HAT is more efficacious than oral methadone for severe heroin addicts. We visited seven HAT treatment centres in four countries in order to observe diacetylmorphine (DAM) administration and to study the main concerns of the staff. Nurses were concerned by the risk taken if a previously intoxicated patient received his dose of DAM. Another concern was the smuggling of DAM doses. The HAT centres face a dilemma: treating patients while at the same time allowing their risky street habits in the centre.

Introduction

Opioid substitution treatment provides an effective solution for dependent patients and helps them to diminish their illicit opioid use (Farrell *et al.* 1994, Van den Brink & Haasen 2006, Lintzeris 2009). This treatment is related to a lower mortality rate among opioid-dependent patients and a decreased transmission rate of infectious diseases such as HIV (Rhodes *et al.* 2010). Methadone treatment is the most important first-line treatment for opioid dependence (Van den Brink & Haasen 2006). However, even though opioid substitution is widely available as in Western Europe [European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) 2009], some severe heroin addicts keep on using street heroin daily.

Heroin-assisted treatment (HAT) is one of the solutions for improving the condition of treatment-resistant heroin

addicts. In 1994, Switzerland began to implement HAT (Perneger *et al.* 1998, Rehm *et al.* 2001). In this treatment, diacetylmorphine (DAM) is prescribed by a physician to severe heroin addicts. These patients administer DAM themselves under the supervision of nurses, in a specific centre, up to three times a day (Table 1).

Since 1994, six randomized controlled trials have been conducted using this treatment model: in Switzerland (Perneger *et al.* 1998), in the Netherlands (van den Brink *et al.* 2003), in Spain (March *et al.* 2006), in Germany (Haasen *et al.* 2007), in Canada (Oviedo-Joekes *et al.* 2009a) and in the UK (Strang *et al.* 2010). Each trial concluded that HAT showed better efficacy for severe heroin addicts than oral methadone maintenance. However, the higher risk of adverse events justifies HAT remaining as a second-line treatment (Ferri *et al.* 2006, Fischer *et al.* 2007, Haasen *et al.* 2007, Lintzeris 2009).

In the countries where HAT has been tested, treatment has continued after the trials, except in Canada

The authors declare that there are no conflicts of interest.

Table 1
Treatment modalities in the heroin-assisted treatment (HAT) trials

| | Switzerland | The Netherlands | Spain | Germany | Canada |
|---|-------------|-------------------------|-----------|-----------|-----------|
| Maximum number of visits per day | 3 | 3 | 2 | 3 | 3 |
| Opening days per week | 7 | 7 | 7 | 7 | 7 |
| Heroin medically prescribed | Yes | Yes | Yes | Yes | Yes |
| Administration only in the HAT centre | Yes | Yes | Yes | Yes | Yes |
| Self-administration under nurse supervision | Yes | Yes | Yes | Yes | Yes |
| Route of administration | Injection | Injection or inhalation | Injection | Injection | Injection |
| Maximum dose per day (mg) | – | 1000 | – | 1000 | 1000 |
| Co-prescription of methadone | Possible | Mandatory | Possible | Possible | Possible |
| Supervision before administration (min) | – | – | 10 | – | 15 |
| Supervision after administration (min) | 30 | – | 30 | 30 | 30 |

–, Not specified in the publication.

(Oviedo-Joekes *et al.* 2009b) where HAT remains illegal and compassionate use has also been denied (Gartry *et al.* 2009). In Switzerland, a referendum reinforced the legality of DAM prescription in November 2008. In the Netherlands, injectable and inhalable forms of DAM were registered for opioid addiction treatment in 2006. In Spain, HAT patients have continued to receive prescribed heroin for compassionate use (Oviedo-Joekes *et al.* 2010). In Germany, heroin prescription was legalized in May 2009 and, in the UK, HAT was a legal treatment long before the recent trial (Lintzeris *et al.* 2006).

Other projects have been planned. Denmark began HAT treatment without a trial in spring 2010 and, in Belgium, the federal government put our team in charge of assessing a randomized controlled trial beginning in January 2011. We therefore visited HAT treatment centres in order to observe heroin administration and to gain information useful for our Belgian protocol. We report in this paper the main concerns expressed by nurses at the HAT centres regarding heroin administration.

Methods

We visited seven HAT centres in four countries where HAT trials have been conducted: in Switzerland (Geneva in 13 and 14 November 2006), in the Netherlands (Amsterdam in 27 October 2006, Rotterdam in 21 September and 10 October 2007, Maastricht in 17 December 2009), in Germany (Cologne in 25 March 2006 and Frankfurt in 14 November 2007) and in the UK (London in 30 January 2008). Ethical approval has been obtained for each trial (Perneger *et al.* 1998, van den Brink *et al.* 2003, March *et al.* 2006, Naber & Haasen 2006, Gartry *et al.* 2009, Strang *et al.* 2010). The Belgian trial received the approval of the Ethics Committee of the Faculty of Medicine (University of Liège) in 2010.

The aim of the visits was to collect detailed information on the process of heroin administration from the entry to the exit of a patient and on the configuration of the

waiting, preparation and administration rooms. We interviewed the staff, mainly nurses, in particular regarding DAM administration. A nurse was interviewed in each centre except in one centre where the visit was led by the centre's general physician. There was no standardized list of questions: we followed each time the trajectory of the patients, asking staff about the process of the DAM administration. Our main question was: 'Can you show me and explain me in detail what a patient (already included) must do when he enters the centre?' Then we followed the nurse from the entrance to the exit while she explained every step the patient must follow and every corresponding task of the nurses. Other important questions were: 'How many nurses should be present in the centre during DAM administration?', 'How many patients are registered in the centre?', 'What are the main problems that you face in your work?'

Detailed notes were taken during those interviews and observations. The interviews were recorded in four centres with the authorization of the staff. In three centres, we were authorized to observe DAM administration, by injection in each of the centres and by inhalation in one of them. Two visits were made with a group within the context of a symposium. In these two visits, we were not able to ask as many questions as in the others. We never stayed more than a couple of hours with the staff except in one centre where we spent 2 days. The transcription documents were analysed with NVIVO 7.

Results

Description of the centres visited

Six clinics were established in an urban area. One of these was located opposite a tram and a bus stop connecting the HAT centre to the city centre. For the staff, this was an advantage because the patients coming from the city centre were almost invisible to the neighbourhood. Only one centre visited was outside the city, in an industrial area. The

smallest centre had 18 patients undergoing treatment, while the largest had 80 patients.

Injectable DAM was available in each centre. In the Dutch centres, inhalable DAM was also available, as in the trial (Hendriks *et al.* 2001, van den Brink *et al.* 2003). More than 80% of the patients took inhalable DAM in the Dutch centres we visited. Patients inhaled DAM by placing a powder (a mix of heroin and caffeine in a ration of 3:1) on a piece of aluminium foil and heating it with a lighter from below. Heroin fumes were then inhaled with a straw (Central Committee on the Treatment of Heroin Addicts 2002). In Switzerland, where DAM tablets have been tested for their efficacy (Frick *et al.* 2006), 14% of the patients of the centre visited took oral DAM.

Inside the centres, the DAM preparation area was next to the DAM administration room, so that nurses could observe patients while preparing other DAM doses. The patients were always under observation by at least two nurses while injecting or inhaling DAM. The Dutch centres had two DAM administration rooms, one for injection and one for inhalation, with the preparation room in between, separated by transparent glass partition walls. In this way, nurses were able to supervise DAM administration in each administration room while preparing doses for the next patients.

Four centres were associated with a methadone clinic in order to reduce expenditure on staff. In order to avoid a mixing of methadone and DAM patients, opening hours were different for methadone and DAM administration. Of these four centres, two were integrated into a methadone clinic from the outset. In one, staff and patients had moved into an existing methadone outpatient centre. In the fourth one, a methadone centre moved into the HAT centre.

Before administration

The principal source of conflict between staff and patients was the centre's closing time because some patients, coming too late, would become angry at seeing the door already closed. But, according to staff, patients learned to respect their schedule. However, staff did not complain spontaneously of conflicts with patients and, in one centre, a nurse said that conflicts were minor compared to the ones in the methadone clinic where she also worked.

Staff insisted on the necessity of looking carefully at the patient's condition before administration in order to identify possible intoxication with street drugs. Nurses were concerned by the risk of overdose if patients were intoxicated at the time of receiving a dose of DAM. Evaluating the intoxicated state of patients relied mainly on the experience of the nurses and on the use of a breathalyser, which was available in each centre. In German centres, a breathalyser was used before each DAM injection (Haasen *et al.*

2009). In the other centres, staff used the breathalyser only when a patient appeared to be drunk or was known to be a heavy drinker. If the level of alcoholic intoxication was too high, subsequent DAM administration would be postponed, decreased or replaced by methadone, depending on the level of alcoholhaemia. The same rules were applied if a patient appeared to be intoxicated by other drugs. In one centre, staff members explained that exhaustion could also aggravate the risk of respiratory depression during DAM administration: one patient presented respiratory depression in the morning with his usual dose of DAM because he was weakened after playing all night on the computer.

Staff did not mention sanctions against patients known to have used drugs before their HAT treatment. On the contrary, in one centre, nurses explained that they wanted patients to feel free to talk about their consumption for two reasons. First, if a patient mentioned drug consumption before an injection, nurses were able to decrease the subsequent DAM dose, in order to avoid respiratory problems. Secondly, if a patient mentioned an increased use of drugs, nurses could enquire as to whether extra help was needed.

During administration

Another concern of staff members was the smuggling of DAM. The DAM administration was therefore supervised to prevent smuggling. Nurses were seen to be very alert to this possibility. According to one staff member, smuggling of DAM was easier with the inhalation form than with the injection form.

In one centre, patients complained to staff that DAM was not as good as street heroin because they felt more sedated with street heroin. A nurse explained that doses of DAM were calculated so that patients were not sedated afterwards.

Concerning methods of injection, three centres accepted intramuscular injection when a patient could not find a vein for injection. Nurses explained it was better to allow this than to refuse injection and to thus send the patient back to heroin street use. Two centres had initially accepted groin injections but this was no longer allowed at the time of our visit, this injecting practice being too risky as explained by Zador *et al.* (2008). Some patients had other habits disturbing to some nurses, such as licking the needle or repeatedly taking blood in the syringe and shooting it back again into the vein. During one administration, which we observed with patient agreement, the two patients were discussing the different kinds of syringes and needles available in the centre. This was a main concern for patients, said a nurse: they needed to have a syringe and needle adapted to their veins or their habits. In another centre, a nurse explained that they had to change the lighters used to

heat the DAM powder because the patients complained: the flame from those lighters was not high or steady enough to facilitate inhalation.

After administration

In six of the centres, patients were requested to remain in the centre after DAM administration (information was lacking in one centre). In four of these centres, patients were closely supervised after administration and were not allowed to leave the centre if they were in a state of sedation. In one of these centres, patients had to wait 30 min after administering DAM. This 30-min rule was applied in spite of some difficulties: patients complained about the long waiting time and the crowded waiting room. Despite these disadvantages, the staff found this waiting time useful for enhancing their therapeutic relationship with the patients. In addition, patients were not able to leave this centre without a nurse verifying with a specific checklist that they were no longer sedated.

Discussion

Avoiding overdoses and smuggling

Staff expressed two main concerns regarding DAM administration: avoiding patient overdoses and preventing DAM smuggling. Therefore, nurses insisted on the necessity of supervising each patient closely during administration.

To avoid overdoses, nurses also tried to assess the state of intoxication of the patient before DAM administration. This evaluation is particularly important because patients involved in HAT programmes frequently use other drugs such as alcohol, cocaine and benzodiazepines (Perneger *et al.* 1998, van den Brink *et al.* 2003, Haasen *et al.* 2007, Oviedo-Joekes *et al.* 2009a, Strang *et al.* 2010) and, in HAT trials, serious adverse events have often been associated with other drug use, such as cocaine and benzodiazepines (March *et al.* 2006, Haasen *et al.* 2007, Oviedo-Joekes *et al.* 2009a). Inhalation could be less dangerous in terms of overdoses than injecting because the inhalation process is slower so patients can adjust the speed and quantity of DAM inhaled (Rook *et al.* 2006). Nurses expressed less fear of overdoses with those patients. Nevertheless, the risk of adverse events in the trials and the risk of smuggling justify the control and close supervision of DAM self-administration.

The control of other drug use before administration may have another positive effect than protecting against overdose. The required breathalyser test in the German centres could explain the significant decrease in alcohol consumption in the German experimental group: patients were

tested before each DAM injection, up to three times a day (Haasen *et al.* 2009).

Staff did not complain about conflicts with patients. However, in the Dutch trial, 6% of the intention-to-treat population in the DAM group had been excluded of the treatment because of the violation of house rules (van den Brink *et al.* 2003).

The dilemma inherent in HAT treatment

The HAT treatment aims to decrease firstly street heroin use and secondly the related health and social problems, by offering to heroin addicts controlled doses of pharmaceutical heroin in a medical and supervised environment. This aim was achieved successfully in the trials (Perneger *et al.* 1998, March *et al.* 2006, Haasen *et al.* 2007, Oviedo-Joekes *et al.* 2009a, Strang *et al.* 2010). However, in HAT centres, a contradiction appears between the offer of DAM in order to decrease street heroin use and the necessity of offering DAM in a safe medical environment. For instance, the rules for a safe medical environment prohibit some methods of consumption and this prohibition may lead patients to continue their habits with street heroin outside the centre, impacting the aim of reducing street heroin use. This contradiction appears in the fixing of the DAM dose: too high, and it can be dangerous for patients, but too low, and it can lead to maintaining street heroin use and impaired the efficacy of the treatment. This dilemma also appears in the method of injecting: staff must choose between allowing risky methods of injection and prohibiting them with the fear that patients will still use them but with street heroin (Darke *et al.* 2001, Maliphant & Scott 2005). In the HAT centre in London, groin injection was finally prohibited after deliberation (Zador *et al.* 2008).

Staff are trained to handle addiction as a brain disease, as recommended (Leshner 1997, McLellan *et al.* 2000). There was no questioning around prescribing or preparing DAM or the supervision of administration. But staff are more powerless when faced with what are mere habits, such as ways of injecting, as shown by the difference in house politics regarding sedation after administration, and the use of intramuscular or groin injection.

Nurses reported few problems and few conflicts with patients. On the contrary, perhaps because this treatment is still controversial, nurses showed a desire to defend HAT and to convince the researcher that this treatment was rigorous and feasible.

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References

- van den Brink W., Hendriks V.M., Blanken P., *et al.* (2003) Medical prescription of heroin to treatment resistant heroin addicts: two randomised controlled trials. *BMJ (Clinical Research Ed.)* **327**, 310.
- Central Committee on the Treatment of Heroin Addicts (2002) *Medical Co-Prescription of Heroin: Two Randomized Controlled Trials*. CCBH, Utrecht. Available at: <http://www.ccbh.nl/NL/index.htm> (accessed 22 June 2007).
- Darke S., Ross J. & Kaye S. (2001) Physical injecting sites among injecting drug users in Sydney, Australia. *Drug and Alcohol Dependence* **62**, 77–82.
- European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) (2009) *Responding to drug problems – an overview*. Available at: <http://www.emcdda.europa.eu/situation/responding/3> (accessed 14 October 2010). (Archived by WebCite® at: <http://www.webcitation.org/5rT5RXq0z>).
- Farrell M., Ward J., Mattick R., *et al.* (1994) Methadone maintenance treatment in opiate dependence: a review. *BMJ (Clinical Research Ed.)* **309**, 997–1001.
- Ferri M., Davoli M. & Perucci C.A. (2006) Heroin maintenance treatment for chronic heroin-dependent individuals: a Cochrane systematic review of effectiveness. *Journal of Substance Abuse Treatment* **30**, 63–72.
- Fischer B., Oviedo-Joekes E., Blanken P., *et al.* (2007) Heroin-assisted treatment (HAT) a decade later: a brief update on science and politics. *Journal of Urban Health* **84**, 552–562.
- Frick U., Rehm J., Kovacic S., *et al.* (2006) A prospective cohort study on orally administered heroin substitution for severely addicted opioid users. *Addiction (Abingdon, England)* **101**, 1631–1639.
- Gartry C.C., Oviedo-Joekes E., Laliberte N., *et al.* (2009) NAOMI: the trials and tribulations of implementing a heroin assisted treatment study in North America. *Harm Reduction Journal* **6**, 2.
- Haasen C., Verthein U., Degkwitz P., *et al.* (2007) Heroin-assisted treatment for opioid dependence: randomised controlled trial. *The British Journal of Psychiatry* **191**, 55–62.
- Haasen C., Eiroa-Orosa F.J., Verthein U., *et al.* (2009) Effects of heroin-assisted treatment on alcohol consumption: findings of the German randomized controlled trial. *Alcohol (Fayetteville, N.Y.)* **43**, 259–264.
- Hendriks V.M., van den Brink W., Blanken P., *et al.* (2001) Heroin self-administration by means of ‘chasing the dragon’: pharmacodynamics and bioavailability of inhaled heroin. *European Neuropsychopharmacology* **11**, 241–252.
- Leshner A.I. (1997) Addiction is a brain disease, and it matters. *Science* **278**, 45–47.
- Lintzeris N. (2009) Prescription of heroin for the management of heroin dependence: current status. *CNS Drugs* **23**, 463–476.
- Lintzeris N., Strang J., Metrebian N., *et al.* (2006) Methodology for the Randomised Injecting Opioid Treatment Trial (RIOTT): evaluating injectable methadone and injectable heroin treatment versus optimised oral methadone treatment in the UK. *Harm Reduction Journal* **3**, 28.
- Maliphant J. & Scott J. (2005) Use of the femoral vein (‘groin injecting’) by a sample of needle exchange clients in Bristol, UK. *Harm Reduction Journal* **2**, 6.
- March J.C., Oviedo-Joekes E., Perea-Milla E., *et al.* (2006) Controlled trial of prescribed heroin in the treatment of opioid addiction. *Journal of Substance Abuse Treatment* **31**, 203–211.
- McLellan A.T., Lewis D.C., O’Brien C.P., *et al.* (2000) Drug dependence, a chronic medical illness: implications for treatment, insurance, and outcomes evaluation. *JAMA: The Journal of the American Medical Association* **284**, 1689–1695.
- Naber D. & Haasen C. (2006) *The German Model Project for Heroin Assisted Treatment of Opioid Dependend Patients: A Multi-Centre, Randomised, Controlled Treatment Study*. Hamburg University, Hamburg. Available at: http://www.heroinstudie.de/H-Report_P1_engl.pdf (accessed 22 June 2007).
- Oviedo-Joekes E., Brissette S., Marsh D.C., *et al.* (2009a) Diacetylmorphine versus methadone for the treatment of opioid addiction. *The New England Journal of Medicine* **361**, 777–786.
- Oviedo-Joekes E., Nosyk B., Marsh D.C., *et al.* (2009b) Scientific and political challenges in North America’s first randomized controlled trial of heroin-assisted treatment for severe heroin addiction: rationale and design of the NAOMI study. *Clinical Trials (London, England)* **6**, 261–271.
- Oviedo-Joekes E., March J.C., Romero M., *et al.* (2010) The Andalusian trial on heroin-assisted treatment: a 2 year follow-up. *Drug and Alcohol Review* **29**, 75–80.
- Perneger T.V., Giner F., del Rio M., *et al.* (1998) Randomised trial of heroin maintenance programme for addicts who fail in conventional drug treatments. *BMJ (Clinical Research Ed.)* **317**, 13–18.
- Rehm J., Gschwend P., Steffen T., *et al.* (2001) Feasibility, safety, and efficacy of injectable heroin prescription for refractory opioid addicts: a follow-up study. *Lancet* **358**, 1417–1423.
- Rhodes T., Sarang A., Vickerman P., *et al.* (2010) Policy resistance to harm reduction for drug users and potential effect of change. *BMJ (Clinical Research Ed.)* **341**, c3439.
- Rook E.J., Huitema A.D., van den Brink W., *et al.* (2006) Pharmacokinetics and pharmacokinetic variability of heroin and its metabolites: review of the literature. *Current Clinical Pharmacology* **1**, 109–118.
- Strang J., Metrebian N., Lintzeris N., *et al.* (2010) Supervised injectable heroin or injectable methadone versus optimised oral methadone as treatment for chronic heroin addicts in England after persistent failure in orthodox treatment (RIOTT): a randomised trial. *Lancet* **375**, 1885–1895.
- Van den Brink W. & Haasen C. (2006) Evidenced-based treatment of opioid-dependent patients. *Canadian Journal of Psychiatry* **51**, 635–646.
- Zador D., Lintzeris N., van der Waal R., *et al.* (2008) The fine line between harm reduction and harm production – development of a clinical policy on femoral (groin) injecting. *European Addiction Research* **14**, 213–218.