Diversion of buprenorphine by sniffing or injection: results from a survey in south-eastern France (Subazur)

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Today, 80,000-90,000 individuals in France have access to buprenorphine mainly through primary care.

Buprenorphine remains the only treatment option for those patients who prefer to start opioid substitution treatment (OST) in primary care.

Buprenorphine diversion by mode of administration or to the black market has already been widely documented in France.
Cochrane’s reviews clearly show that patients receiving buprenorphine have the same outcomes as patients on methadone if dosages are high enough (Mattick et al. 2004).

A French study (Vidal-Trecan, DAD 2003) already suggested the relationship between low prescribed dosages and buprenorphine injection.

However, it is still unknown:

1. To what extent lack of satisfaction with dosages or care received can influence buprenorphine diversion
2. Whether buprenorphine injection and buprenorphine
Objectives

- Describe demographic and psychosocial characteristics, addictive behaviours and diversion in stabilised patients receiving office-based buprenorphine

- Evaluate whether satisfaction with care may predict diversion by sniffing or injection

- Identify predictors of:
  - buprenorphine injection
  - buprenorphine sniffing
Design

- Longitudinal study recruiting patients between October 2004 and May 2005

- 32 physicians enrolled in Bouches du Rhone and Vaucluse (south-eastern France)

- 111 stabilized patients receiving office-based buprenorphine

- 2 longitudinal assessments (M0-M6) using questionnaires by phone interviews
At the enrolment interview: information collected retrospectively about patient’s addictive behaviors during lifetime or before buprenorphine initiation.

At both interviews: information about recent drug-related behaviors and experience with treatment.

Two logistic regression models based on Generalised Estimating Equations (GEE) were used to identify predictors of buprenorphine injection or buprenorphine sniffing.
Results

111 stabilized patients (>3 months buprenorphine) receiving office-based buprenorphine were enrolled

- males represented 68%
- median age = 38 years
- 40% reported being HCV-infected and 17% HIV-infected

75 patients were followed up 6 months after the enrolment

Overall these patients accounted for 186 visits which were included in the data analyses
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having child(ren)</td>
<td>57</td>
<td>(54)</td>
</tr>
<tr>
<td>Living in a stable relationship</td>
<td>48</td>
<td>(45)</td>
</tr>
<tr>
<td>High school certificate</td>
<td>26</td>
<td>(27)</td>
</tr>
<tr>
<td>Employed</td>
<td>53</td>
<td>(49)</td>
</tr>
<tr>
<td>Stable housing</td>
<td>97</td>
<td>(91)</td>
</tr>
<tr>
<td>Owner or renter of her/his home</td>
<td>12</td>
<td>(13)</td>
</tr>
<tr>
<td>Good health status</td>
<td>84</td>
<td>(79)</td>
</tr>
</tbody>
</table>
Self-reported addictive characteristics recorded at M0 (Subazur Study, N=111)

<table>
<thead>
<tr>
<th>Condition</th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buprenorphine injection(^1)</td>
<td>35</td>
<td>(32)</td>
</tr>
<tr>
<td>Buprenorphine sniffing(^1)</td>
<td>33</td>
<td>(30)</td>
</tr>
<tr>
<td>Heroine dependence(^2)</td>
<td>85</td>
<td>(77)</td>
</tr>
<tr>
<td>Cocaine dependence(^2)</td>
<td>14</td>
<td>(13)</td>
</tr>
<tr>
<td>Alcohol dependence(^2)</td>
<td>9</td>
<td>(8 )</td>
</tr>
<tr>
<td>Alcohol dependence (CAGE)(^3)</td>
<td>27</td>
<td>(24)</td>
</tr>
<tr>
<td>Experience of overdose</td>
<td>26</td>
<td>(24)</td>
</tr>
<tr>
<td>Suicide ideation or attempt</td>
<td>44</td>
<td>(40)</td>
</tr>
<tr>
<td>Polydrug dependence(^4)</td>
<td>21</td>
<td>(19)</td>
</tr>
</tbody>
</table>

\(^1\) after buprenorphine initiation  
\(^2\) before starting buprenorphine  
\(^3\) in the year prior to the interview  
\(^4\) two or more non prescribed drugs
Results

Among those with complete data about buprenorphine diversion at M0, a weak overlap of the two practices was observed:

<table>
<thead>
<tr>
<th></th>
<th>No BUP snifing</th>
<th>BUP sniffing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No BUP injection</td>
<td>53</td>
<td>21</td>
<td>74</td>
</tr>
<tr>
<td>BUP injection</td>
<td>23</td>
<td>12</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>33</td>
<td>109</td>
</tr>
</tbody>
</table>
Diversion by injection

- 36 patients reported buprenorphine injection in 40 interviews
- Factors associated with buprenorphine injection (p<0.20) and eligible for the final model were
  - Not living in a stable relationship
  - History of alcohol dependence or alcohol dependence in the year prior to the visit
  - Experience of overdose or suicide
  - Longer time since first injection
  - Unsanctioned use (purchase or resale)
  - Perception of inadequate dosage
  - High buprenorphine dosages
Diversion by sniffing

- 33 patients reported buprenorphine sniffing in 45 interviews
- Factors associated with buprenorphine sniffing (p<0.20) and eligible for the final model were:
  - Younger age
  - No children
  - No high school certificate
  - Not living in a stable relationship
  - Neither owner nor renter of home
  - Childhood outside family or with just one parent
  - History of drug sniffing (other than buprenorphine)
  - Shorter time since first injection
  - Dissatisfaction with BUP treatment
  - Unsanctioned use
  - Problems with the law
Factors independently associated with self-reported buprenorphine injection or sniffing
(Subazur, N=111 patients, 186 visits)

<table>
<thead>
<tr>
<th></th>
<th>adjusted OR</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INJECTION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median time since the first Injection (per 1 year increase)</td>
<td>1.05 [1.01-1.10]</td>
<td>0.01</td>
</tr>
<tr>
<td>Suicide ideation or attempt</td>
<td>2.6 [1.2-5.7]</td>
<td>0.02</td>
</tr>
<tr>
<td>Dosage perceived as inadequate</td>
<td>2.7 [1.1-7.0]</td>
<td>0.04</td>
</tr>
<tr>
<td><strong>SNIFFING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Childhood outside family or with just one parent</td>
<td>3.2 [1.2-8.4]</td>
<td>0.05</td>
</tr>
<tr>
<td>History of drug sniffing</td>
<td>7.7 [2.7-21.9]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Not living in a stable relationship</td>
<td>3.6 [1.3-9.6]</td>
<td>0.01</td>
</tr>
<tr>
<td>Dissatisfaction with BUP treatment</td>
<td>3.4 [1.2-10.0]</td>
<td>0.02</td>
</tr>
</tbody>
</table>
Patient on BUP in Subazur: Interpretations

- Perception of inadequate dosage
- Severe drug dependence profile
- Cocaine dependent profile
- INJECTION
- SNIFFING
- Dissatisfaction with treatment
Conclusions

- Buprenorphine recommended dosages are lower in France than elsewhere and inadequate buprenorphine dosage may be a cause of buprenorphine injection. This is comparable to heroin use during methadone treatment.

- The “Ceiling effect” of buprenorphine could be responsible for the treatment’s inadequacy for severely drug dependent patients.

- A weak overlap exists between buprenorphine injectors and sniffers. This latter group perceive buprenorphine as inappropriate to treat their dependence.

- Buprenorphine injection or sniffing should be regarded more as a non-adherence response to inadequate care than a true “misuse”.
Conclusions

- However, both behaviors are symptoms of:
  - the need for a wider spectrum of treatment options and strategies also available in primary care
  - the importance of better coordination between the different health care professionals to properly deliver comprehensive care

- Monitoring diversion during OST contributes to reducing drug-related harm by providing patients with appropriate and tailored care (treatment, psychiatric and social services)

- Combined harm reduction approaches based on both wide access to OST and needle syringe programs should be introduced in countries which face HIV and HCV epidemics among drug users.
Acknowledgements

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- The physicians who were involved in the study.