

## ORIGINAL ARTICLE

## Hepatitis B vaccination for sex workers: do outreach programmes perform better?

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**Objectives:** To assess to what extent hepatitis B vaccination of sex workers in Ghent, Belgium, is successful within the context of the existing health services and to compare this with alternative approaches such as outreach programmes; to compare two hepatitis B vaccination schemes in the outreach programme for sex workers.

**Methods:** Testing all first contacts ( $n = 1096$ ) in the outreach programme for hepatitis B virus (HBV) markers assessed success of hepatitis B vaccination in routine services. The performance of the outreach service was measured by counting the number of sex workers who started hepatitis B vaccination in the programme. The hepatitis B vaccination schemes were assessed by analysing the number of people completing the vaccination.

**Results:** Naturally acquired HBV was found in 11.9% of 1096 sex workers (0.6% HBsAg), and 7% were vaccinated in existing services. In contrast, hepatitis B vaccination using outreach methodology was able to achieve higher vaccination rates: among non-immune sex workers 82.8% received the first dose of vaccine, and 71.5% the second. If given 1 month later, 67.9% received the third dose, in contrast with 47.9%, when given 6 months later.

**Conclusions:** Existing services are not successful in vaccinating sex workers for HBV, in contrast with specifically targeted outreach services. Shorter intervals between vaccine doses gave better compliance.

Sex workers are among the high risk group of "people with multiple sex partners" and both the Viral Hepatitis Prevention Board (VHPB) and the US Centre for Disease Control and Prevention recommended that strategies aimed at vaccinating and changing behaviour in high risk groups must continue.<sup>1,2</sup> Also in the European guideline for the management of hepatitis B infections sex workers are considered as a high risk group for hepatitis B, which should be vaccinated against.<sup>3</sup>

The objective of this study was to assess to what extent hepatitis B vaccination of sex workers in the larger Ghent, Belgium, area is successful in the light of these recommendations. The actual vaccination status is reflecting the efficacy of existing health services to vaccinate this group. These data are confronted with the results of an outreach programme wherein we have administered vaccines according to the 0, 1, 6 months and 0, 1, 2, 12 months scheme.

## METHODS

The success of hepatitis B vaccination for sex workers in the existing health services was assessed by analysing the history of immunisation and the HBV marker status of sex workers who entered a hepatitis B vaccination programme aimed at sex workers in the larger Ghent area, with one million inhabitants, and an estimated sex worker population of 1000. The hepatitis B vaccination programme is embedded in a broader effort, which also encompasses other health issues and psychosocial problems related to sex work.

At their first contact with the outreach programme all sex workers were informed about the professional risk of HBV infection, and those who consented were tested for HBV markers (HBsAg, anti-HBc, anti-HBs). Sex workers who reported a history of vaccination were offered a test for anti-HBs to estimate the need for a booster dose. Those with an incomplete history of vaccination, and those with an antibody level of less than 10 IU/l received recombinant hepatitis

B vaccine, 20 µg/dose, to complete their scheme or as a booster. Those with no history of vaccination and no HBV antibodies were offered a full vaccination scheme.

From September 1992 till March 1995 vaccines were administered according to scheme 0, 1, 2, 12 months (scheme 1) and from March 1995 till February 2000 the vaccination scheme was 0, 1, 6 months (scheme 2). Because a first analysis of the compliance of both schemes showed a better compliance for scheme 1,<sup>4</sup> this scheme was reintroduced in February 2000.

The outreach vaccination programme aimed at contacting all sex workers in all professional settings in the area, such as windows, bars, clubs, saunas, escort services, and private addresses. In the area studied, street work did not occur and injecting drug using sex workers were rare. In the beginning, project workers identified work places searching the streets and analysing publicity from sex workers in the local newspapers. Later on sex workers often contacted the project team themselves.

In the programme a medical doctor and a social nurse visited the workplaces of the sex workers. They discussed professional risks, handed out prevention materials (a guide on safe sex at work, leaflets about condom breakage, lubricants), and offered free screening for STI (*Chlamydia trachomatis*, gonorrhoea, syphilis, HIV), a cervical smear, and free vaccination against hepatitis B. Psychosocial or legal problems related to sex work could be discussed.

Anonymity was guaranteed. The sex worker received a unique code number, and her date of birth was registered, as well as her location and professional name. The project workers took the initiative for follow up visits. The sex worker was asked to contact the programme if she changed workplace. If she failed to do so, she was often lost to follow up, unless the team could pick her up in another workplace. Test results could only be discussed on a personal basis with the project team and, whenever necessary, referral was made to regular health services.

**Table 1** HB vaccination coverage of sex workers in the outreach programme in Ghent, Belgium

	No of candidates	First vaccine	Second vaccine	Third vaccine	Fourth vaccine
		Month 0	Month 1	Month 2	Month 6
Scheme 1 (0, 1, 2, 12 months)	414 (100%)	354 (85.5%) 100%*	314 (75.8%) 88.7%	281 (67.9%) 79.4%	184 (44.4%) 52.0%
Scheme 2 (0, 1, 6 months)	474	381 (80.4%) 100%*	321 (67.7%) 84.3%		227 (47.9%) 59.5%
Total	888	735 (82.8%)	635 (71.5%)		

\*Follow up doses as percentage of first dose.

## RESULTS

From September 1992 to December 2000, 1096 sex workers entered the programme. Most sex workers (1072, 97.8%) were women. Age ranged from 17 to 66 years (median 28 years). Most sex workers were of Belgian nationality (61.7%), followed by French (13.2%) and north African (9.9%). All types of sex work are represented, but most sex workers were found in clubs and bars (easily identifiable from outside by colourful lights), were window prostitutes, or worked in private houses (advertising telephone numbers in local newspapers).

The distribution of nationality, workplace, and age group did not change substantially over the years.

Naturally acquired HBV was found in 11.9% of all sex workers at first contact with the programme, and 0.6% was positive for HBsAg. None of these tested positive for HBeAg. Isolated anti-HBs was found in 7.0%, and we assume that this is the result of vaccination. Most of the subjects received hepatitis B vaccination as students, or during a national vaccination programme. The latter was the case for the French sex workers. The number of subjects presenting with isolated anti-HBs increased over time. Only 11 sex workers, which is 1.0% of the entire study population, received hepatitis B vaccine because of being a sex worker. Of the 1096 subjects, 888 or 81.1% were not protected against HBV. This figure evolved from 86.0% in the early 1990s to 75.0% in the late 1990s.

The number of naturally acquired HBV infections is largely influenced by the women's nationality. Sub-Saharan Africans showed HBV markers in 55.9%, eastern Europeans in 26.1%, and north Africans in 18.5%. In Belgian sex workers HBV seroprevalence is very low (5.3%) and very few turned out to be vaccinated (4.4%). This is in sharp contrast with the French sex workers, of whom 20.0% were vaccinated. In the age group of 18–20, 35% (14/40) of the French women were vaccinated, whereas only 1.2% (1/85) of the Belgian women were. For the age group of 21–24 the results were 23.5% (8/34) against 6.3% (9/144) and for the older age groups 10.1% (7/69) against 4.5% (20/444).

In table 1 hepatitis B vaccination coverage rates for the two vaccination schemes used in the outreach programme are shown. In total, 414 sex workers received scheme 1 and 474 scheme 2. Overall, 82.8% of the eligible sex workers started with a first vaccine dose and 71.5% received the second dose. For the third dose an important difference between scheme 1 and scheme 2 is observed because of the timing of that dose. While in scheme 1, 67.9% received the third dose at month 2, in scheme 2 only 47.9% received the third dose at month 6. The fourth dose of scheme 1 was administered in 44.4% of the subjects.

## DISCUSSION

The sex worker population in this study is considered as representative for the majority of sex workers in Belgium. Inner city street sex workers, who can be found in Brussels,

Antwerp, and Liège, were not included. They form a numerical minority, but receive most of the media attention.

The risk of acquiring HBV in sex work will depend on the immunity of the sex worker and the HBV prevalence of clients. This risk is relatively low in Belgium, which is reflected in the low prevalence of HBV markers in the sex worker population (comparable with the prevalence in the general population<sup>5</sup>), but this may change over time (change of characteristics of male immigrant population). We believe therefore that sex workers in Belgium should be immunised against HBV, following international recommendations.

This study clearly shows that regular services in Belgium do not succeed in implementing the international recommendations regarding hepatitis B vaccination in sex workers. Hardly any sex worker, irrespective of the country of origin, received a vaccination because of their sex work.

The European Network for HIV/STD prevention in prostitution<sup>6</sup> highlighted two main obstacles, which could explain this low coverage rate in sex workers. Firstly, some sex workers do not qualify for "government supported" health services and this particularly applies to migrant sex workers, many of whom reside illegally in a country. Secondly, the organisation of most healthcare systems is not always compatible with the lifestyle and social status of sex workers. Staff in clinics and hospitals are often reported as having a negative attitude towards sex workers. As a result of this and the general taboo on sex work, sex workers are reluctant to use health services and, if they consult, do not disclose their "work" to the healthcare providers. In our outreach project over 50% of the sex workers said that they did not wish to reveal their profession to their treating physician.<sup>7</sup> In most countries sex workers operate clandestinely, a situation that impedes their access to health services.<sup>8</sup> A further obstacle to the access of health services is the high mobility of sex workers. They are often not working in their home area and regularly change workplaces. In search for anonymity some sex workers prefer not to work in their own country. This phenomenon is observed in many border areas in Europe.<sup>9</sup> Another obstacle for hepatitis B vaccination may be the cost of the vaccine. In Belgium the cost for three vaccine doses amounts to approximately €100 (£62), and is not covered by social security.

If the main impediments to hepatitis B vaccination are non-identification of the risky behaviour and difficult access of health services, the logical approach seems then to bring the services towards the sex workers, through outreach programmes.<sup>10</sup> The sex worker does not need to explain his or her professional activities any more to the healthcare worker, who immediately has a realistic picture of the working characteristics and conditions. Hepatitis B vaccination is not high on the sex workers' priority list and one cannot expect them to spend much money, time, and effort in their search for vaccination.

The results of our study demonstrated the feasibility of the outreach programme.

In Belgium, with no specific STD services, the outreach service is NGO based. In countries with regular STD services,

with free access and vaccines available at no cost, such as the United Kingdom, outreach services may be linked to these services, to overcome the constraints just described.<sup>11</sup>

When comparing two vaccination schemes, it becomes clear that short intervals between consecutive vaccine doses greatly improve the compliance in this particular group. The number of women having received at least three doses in the 0, 1, 2, 12 months (scheme 1) group is 67.9%, in contrast with the 47.9% in the 0, 1, 6 months (scheme 2) group. The reason for the decline in compliance is the high mobility of sex workers. Many will only work for a few weeks or months in the same workplace, and move then to another place or another area, and cannot then be traced by the project workers.

The number of women who completed scheme 1 was a little lower from those completing scheme 2. Apparently, those working in the same place for 6 months are likely to be found 12 months later, and most sex workers are lost between month 2 and month 6. Therefore, we decided to shift from scheme 2 operational from March 1995 till February 2000 back to scheme 1 initially used since 1992. The development of new hepatitis B vaccines, with shorter intervals or fewer doses, would greatly improve the compliance in this population. We acknowledge that the use of historical controls to compare the two schemes is not optimal. Sex worker populations may change over time, influencing the results of the programme. Implementing two different schemes in one sex worker population will however introduce operational problems, and may create misunderstanding in the target population. One might select an intervention area, and a control area, but the mobility of sex workers may interfere with this approach.

The study shows the potential impact of national hepatitis B vaccination programmes on HBV prevention in this particular high risk group as is demonstrated by the occurrence of anti-HBs in the French sex workers, of whom 20.0% were anti-HBs positive, whereas only 4.4% of the Belgian sex workers had anti-HBs. Especially in the younger age groups the number of vaccinated sex workers was much higher for the French than for the Belgian nationalities. France started an adolescent immunisation programme in 1994, with catch up immunisations for older age groups, backed up by a strong media campaign.<sup>12</sup>

As shown by the serological findings in the French women, universal vaccination programmes may progressively make specific actions towards sex workers and other risk groups redundant. However, today this is not yet the case. In our survey 71% of the French sex workers were not yet immune. Furthermore, certain subgroups such as migrant and illegal sex workers, and those coming from countries without universal hepatitis B vaccination as well as older sex workers, still need a targeted approach. Future vaccine developments, such as a vaccine against oncogenic HPV<sup>13</sup> and in particular against HIV, will again challenge existing health services and warrant novel approaches such as outreach for subgroups at high risk.

One should not forget that HBV is but one of the many problems sex workers are confronted with. They equally are at increased risk of HIV and other STI which cannot be prevented by vaccination and which are often not curable. Violence<sup>14</sup> and high psychosocial stress need to be addressed as well. We recommend a comprehensive approach to all these problems, of which hepatitis B vaccination may take a central role, as a practical example of how sex workers can protect themselves against occupational risks. Developing targeted services for sex workers will complement existing general health services<sup>15</sup> as long as the taboo on sex work is present in society and the health and psychosocial risk of sex work is not recognised as such.

## Key messages

- Sex workers in Belgium are not well protected against hepatitis B either by natural immunity or existing vaccination practices in the regular health services.
- Outreach services specifically targeted to sex workers achieved a high success rate for hepatitis B vaccination
- Shorter intervals between doses of vaccine are associated with better compliance in this particular risk group

## CONTRIBUTORS

RM is the principal investigator; AT and MC are his colleagues working in the sex worker outreach programme; LVR performed and interpreted the tests; GL-R and PVD were involved in the redaction of the article.

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