

Hepatitis B vaccination status of medical officers at The Canberra Hospital

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Abstract

In November 1996, a study was conducted to determine the proportion of doctors fully vaccinated against the hepatitis B virus (HBV) at The Canberra Hospital (TCH) and identify the reasons for either non- or inadequate vaccination. TCH currently recommends that all health-care workers maintain an HBV antibody level above 100mIU/ml. Antibody levels should be checked, and a booster vaccination given if required, every 3 to 5 years.

In all, 269 confidential, coded questionnaires were distributed to the entire medical staff, including interns, residents, registrars, visiting medical officers and staff specialists. They were asked whether they were immunised against HB and, if so, when they were vaccinated and how many doses they had received. The doctors were also asked if their antibody level was tested post-vaccination and, if so, the result. If vaccination did not occur or was incomplete, the reason for this was requested. Participants were also asked if they considered themselves at risk of acquiring HBV.

The 177 questionnaires (66 per cent) returned showed an overall 87 per cent compliance with the recommended staff HBV vaccination schedule. Sixty per cent of respondents were vaccinated more than 5 years ago, while 27 per cent either had not had or could not recall having a post-vaccination HBV antibody test. Where an HBV antibody test had been performed, 60 per cent of responders knew that their antibody level was >100 mIU/ml.

Results of the study indicate that, although the level of HBV protection in TCH medical staff is comparable with reported vaccination rates of similar groups overseas, compliance with the recommended schedule for this at-risk group of health-care workers is sub-optimal.

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Introduction

The hepatitis B virus (HBV), which causes inflammation of the liver, is spread by contact with blood, fluids derived from blood, saliva, semen and vaginal fluids, usually via a breach in the skin or contact with the internal lining surfaces of the body.

Occupational acquisition of HBV is a small but important mode of transmission. For health-care workers (HCWs), HBV is an important health hazard, as their risk of contracting the disease is higher than that of the general population¹. (In Britain, the incidence rate of HBV in surgeons is reported to be 25 per 100,000. This compares with four per 100,000 (males) and two per 100,000 (females) in the general population².) Further, HBV has been transmitted from HCWs to patients in gynaecological and cardiac surgery, dentistry and general practice^{3,4}.

Vaccination against HBV is an effective method of prevention and it is policy in Australian hospitals for all HCWs potentially

exposed to the virus to be offered immunisation against the disease. Although the use of the vaccine for HCWs has long been advocated, early studies have shown that uptake of the vaccine is low.

These studies have also shown that, despite medical staff being considered among the HCW groups at most risk, they are incompletely protected against HBV⁵.

At The Canberra Hospital (TCH), the current recommendations for all HCWs are that an HBV antibody level above 100mIU/ml should be maintained, with antibody levels checked and a booster vaccination given if required every 3 to 5 years.

Aim

The aim of this study was to assess the proportion of medical staff fully vaccinated against HBV at TCH and the reasons for non- or inadequate vaccination. It was anticipated that this

information would be used as the basis for developing a campaign to increase vaccine coverage, if this was warranted.

Method

In November 1996, a total of 269 confidential, coded questionnaires were distributed, with a covering letter, through the mail to all medical staff working at TCH. Those staff included interns, residents and registrars (n=90), visiting medical officers (VMOs) and staff specialists (n=179). All the doctors were asked whether they had been immunised against HBV and, if so, how many doses they had received, when they were immunised and the results of their post-vaccination serology, if this was performed. Those only partially or not vaccinated were asked the reason why. Further, all the doctors were asked whether they considered themselves at risk of acquiring HBV.

Results

In all, 177 medical officers (15 interns, 17 residents, 26 registrars, 43 staff specialists, 72 VMOs and four unknowns) returned the questionnaire, a response rate of 66 per cent. Most of the respondents (87 per cent) had previously received HBV vaccine. Of those 154 respondents, 30 (19 per cent) had received more than three injections, 89 (58 per cent) the full course of three injections and 22 (14 per cent) only one or two of the three-injection course, while 13 (9 per cent) could not recall how many injections they had received (see Table 1).

In reply to the question 'How long ago did you receive the vaccine?', seven (4 per cent) answered less than 1 year, 54 (36 per cent) between 1 and 5 years ago, 69 (45 per cent) between 5 and 10 years ago and 16 (10 per cent) more than 10 years ago, while seven (5 per cent) could not recall when they were vaccinated (see Table 2).

Of the 154 respondents who replied that they had been vaccinated against HBV, 113 (73 per cent) had been tested at some time for HBV antibodies, to determine their response to the vaccine. However, 25 individuals (16 per cent) had never been

tested for antibodies and 16 (10 per cent) did not know if they had received an antibody test at all. Of those who did have their antibody level checked, 73 (64 per cent) had been tested between 0 and 3 years ago. Only 68 doctors (60 per cent) who had at some time received the antibody test knew that their result was greater than 100 mIU/ml.

Thirty four respondents who had been vaccinated more than 3 years ago were asked whether they had received a further booster vaccination or antibody test. Of those vaccinated 3 to 6 years ago (n=21), 18 (86 per cent) had not received a further booster vaccination and 19 (90 per cent) had not received a further antibody check. Eight (89 per cent) of those vaccinated 6 to 9 years ago (n=9) had not received a further antibody check and six (67 per cent) had not received a further booster vaccination. In the final group, of those vaccinated more than 9 years ago (n=4), no-one had received a further antibody test or booster vaccination.

Of all the respondents, only 20 (11 per cent) had not been vaccinated at all, with another two unaware of their vaccine status. The reasons respondents gave for not being adequately vaccinated were as follows:

- 'Never got around to it';
- 'Have acquired antibodies through exposure to HBV';
- 'Immunisation not considered or suggested';
- 'Choice';
- 'No follow-up by vaccination clinic';
- 'Medical school stopped offering free vaccinations', and
- 'Risk of acquiring HBV small and am uncertain of long-term effects of the vaccine'.

Reasons for not receiving further booster injections or antibody tests included:

- 'Forgot about boosters';
- 'Boosters are painful, plus I have cover (8mIU/ml)', and
- 'I am a low exposure risk'.

Of the 177 medical staff surveyed, 111 (63 per cent) believed that they were at risk for HBV and 51 (29 per cent) that they were not at risk, while 15 (8 per cent) did not know their risk status. The main reasons given by respondents for their perceived HBV risk were:

- 'Due to work related exposure/needlesticks';
- 'Because I come into contact with patients' body fluids';
- 'Because I work in a high-risk occupation', and
- 'I am unsure of my antibody status'.

Table 1. Compliance of medical staff with hepatitis B vaccination schedule.

>3 vaccines	3 vaccines	1 or 2 vaccines	No recall	Total
30	89	22	13	154

Table 2. Time elapsed since hepatitis B vaccination performed.

<1 years	1-5 years	5-10 years	>10 years	No recall	Total
7	54	69	16	7	153

Conversely, the main reasons medical staff gave for not perceiving themselves as at risk for HBV were:

- 'I have been vaccinated';
- 'I presume I am immune, with adequate antibodies', and
- 'I work in a low-risk area or only with children'.

Respondents unsure of their risk status gave the following reasons:

- 'Very small risk, as I don't undertake surgery';
- 'Probably not at risk as I only occasionally give IV injections';
- 'I don't seroconvert', and
- 'I am unsure of my antibody status'.

Discussion

The results of this survey demonstrated that 87 per cent of the medical staff surveyed had at some time been vaccinated against HBV. This was encouraging and compares favourably with much lower rates of vaccination reported overseas. However, it is still of concern to see sub-optimal vaccination rates, since HBV is eminently preventable. The ideal protection level for staff working in risk occupations should be 100 per cent*.

Our concern was further heightened when we identified that 60 per cent of respondents said they had at some time been vaccinated against HBV but were still potentially at risk because their vaccination was done more than 5 years ago. It can also be assumed that several of the 36 per cent who received their vaccine between 1 and 5 years ago will soon be joining the aforementioned group, thus increasing the numbers of those 'potentially at risk'. Of course, the significance of this will depend on the duration of protection after successful seroconversion following HBV vaccination.

Despite documented evidence of the importance of testing for antibodies post-vaccination and at regular intervals thereafter, 27 per cent of respondents were unaware of receiving, or had not received, an antibody test for HBV. Of those who had had their antibody level checked at some time, only 60 per cent knew their result was satisfactory.

Of further concern was the group of 82 per cent of respondents who had been vaccinated more than 3 years ago but had not received further booster vaccinations. HBV antibody checks had not been performed on 91 per cent of this group. Such results suggest that many medical staff believe they are protected against HBV when in fact, due to a lack of antibody testing or further booster vaccinations, their level of antibodies may put them at risk.

In light of this evidence, a high-profile HBV vaccination program which targets medical staff is being implemented. Vaccinations are provided in the medical staff work areas and follow-up HBV antibody testing is encouraged. All new staff are advised on the need for HBV vaccination and the necessity of maintaining adequate HBV antibody levels. Implementation of such a program for medical staff at TCH is helping achieve the goal of preventing transmission of HBV between HCWs and patients.

References

1. Dienstag JL & Ryan DM. Occupational exposure to hepatitis B virus in hospital personnel: infection or immunisation? *Am J Epidemiol* 1982; **115**:26-39.
2. Berridge DC, Galea DF, Evans DF *et al.* Hepatitis immunisation in vascular surgeons. *Br J Surg* 1990;585-86.
3. Polakoff S. Acute hepatitis B in patients in Britain related to previous operations and dental treatment. *Br Med J* 1986; **293**:33-36.
4. Welch J, Webster M, Titzer AJ *et al.* Hepatitis B after gynaecological surgery. *Lancet* 1989; **1**:205-07.
5. Rogan PD & Duguid JKM. Immunisation of staff of regional blood transfusion centre with recombinant hepatitis B vaccine. *J Infect* 1991; **22**:5-9.
6. Stanford MP, Black TR, March LM *et al.* Hepatitis B vaccination rates among staff at a district general hospital. *Med J Aust* 1995; **162**:304-06.

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