

Hepatitis B vaccine uptake among surgeons at a London teaching hospital: how well are we doing?

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In order to determine the perceptions of surgical staff of the risks of hepatitis B virus (HBV) infection and its prevention through vaccination, and to assess frequency of 'sharps' injuries and compliance with the Department of Health (DoH) recommendations on vaccination, a questionnaire was distributed to surgical staff in the Guy's and St Thomas' Hospital Trust. Only 52 of the 88 surgeons who responded (59%) had documented vaccine-induced immunity to HBV. Eighty-five (97%) had received at least one dose of vaccine but 15 of these (18%) had failed to complete the course. Of the 70 surgeons completing the course, only 56 (80%) had had their immune responses checked and only 44 (63%) had been advised about booster doses. In all, 39% admitted sustaining a 'sharps' injury at least once a month, yet only 17% consistently reported these injuries. Those least likely to report were cardiothoracic and obstetric and gynaecology surgeons; these specialties also sustained the highest frequency of 'sharps' injuries. Ophthalmologists, who sustained the lowest rate of injury, were most likely to report. In conclusion, a significant number of surgeons appeared not to have completed a course of hepatitis B vaccine in the presence of a high frequency of 'sharps' injuries. Following the publication of DoH guidelines on protecting workers from HBV, it must be stressed that failure to comply with recommendations may have medicolegal implications.

Healthcare workers are at risk of acquiring hepatitis B virus (HBV), as well as other blood-borne virus infections occupationally, through percutaneous or mucosal exposure to contaminated blood and body fluids. Since those involved in invasive prone procedures may not only be at risk of acquiring infection but also of transmitting HBV to patients, the Department of Health (DoH) published recommendations stating that "provider units should aim to immunise and check the immunity of all surgeons by 1994 and of all staff involved in exposure prone procedures by the middle of 1995" (1).

Trusts may well vary as to the diligence with which they have attempted to comply with the DoH recommendations; there is no nationally collected data available to assess the success of the DoH's initiative.

This study reports the results of a survey conducted among surgeons in a teaching hospital associated Trust in Inner London. The study attempted to determine the perceptions of surgical staff of the risks of HBV infection, its prevention through vaccination, and to assess compliance with the DoH recommendations.

Materials and methods

In March 1995 we circulated an anonymous questionnaire to 171 surgeons; all grades and all surgical specialties were included. Addressed envelopes were provided and, for those who did not respond, a reminder was sent out after 1 week. In addition to determining views on perceived risks of HBV infection and prevention by vaccination, the questionnaire also aimed to determine the incidence and reporting of sharps injuries, HBV immunisation status, whether antibody levels had been checked, and whether booster doses or advice about them had been provided.

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Table I. Number of surgeons in each specialty responding to the questionnaire

Specialty	Number of respondents (%)
Cardiothoracic	15/20 (75)
Ophthalmology	16/24 (67)
Plastic	7/12 (58)
Obstetrics & gynaecology	16/35 (46)
General	14/31 (45)
Orthopaedics	9/20 (45)
Urology	6/16 (38)
ENT	4/13 (31)
Unknown	2 (1)
Total	88/171 (51)

The Trust's Department of Occupational Health is responsible for offering HB vaccine to new and existing staff, for ensuring that post-immunisation antibody responses are checked and booster doses recommended, and for the management of sharps injuries.

Results

Of 171 questionnaires, 88 (51%) were returned. The response rate varied according to specialty (Table I), being highest in cardiothoracic and ophthalmic surgeons. The response rate also correlated with seniority, being highest among consultants (62% replied) and lowest in SHOs and PRHOs (14% and 10%, respectively).

Of respondents, 81 (92%) felt that they were at risk from HBV infection before vaccination. Although 85

Table II. Frequency of sharps injuries

Frequency	Number of respondents (%)
One per week	6 (7)
One per fortnight	10 (11)
One per month	18 (21)
One per 6 months	16 (18)
One per year	13 (15)
Less than one per year	24 (27)
No answer	1 (1)
Total	88

(97%) claimed to have been vaccinated, 15 had failed to complete their course. Thus, only 70 (80%) had received a full course of vaccine.

Of the 70 who had received a full course, 56 (80%) had had their antibodies checked, but only 44 (63%) had been advised about booster doses. Of the 56 checked, six had been identified as non-responders, although two had responded after a second course. Thus, only 52 of those returning questionnaires (59%) had documented vaccine-induced immunity.

Table II shows the frequency of sharps injuries; overall, of 88 surgeons, 34 (39%) admitted to sustaining at least one injury per month. Sharps injuries occurred most frequently among cardiothoracic and obstetric and gynaecological surgeons (Table III) and least frequently among ophthalmologists. Only 17% of surgeons claimed always to report such incidents (Table IV). Ophthalmologists were most likely to report, whereas cardiothoracic and obstetric and gynaecological surgeons were least likely.

Table III. Frequency of sharps injuries by specialty

Frequency of sharps injuries	Cardiothoracic (%)	O & G (%)	General (%)	Ophthalmology (%)	Others*	Total (%)
> 1/month	9 (60)	10 (63)	7 (50)	0 (0)	8 (30)	34 (39)
< 1/month, > 1/year	6 (40)	5 (31)	3 (21)	6 (38)	9 (33)	29 (33)
< 1/year	0	1 (6)	3 (21)	10 (62)	10 (37)	24 (27)
No answer	0	0	1	0	0	1
Total	15	16	14	16	27	88 (100)

O & G = Obstetrics and gynaecology

* Other specialties = Plastics, ENT, urology and orthopaedics

Table IV. Reporting of sharps injuries by specialty

Do you always report sharps injuries?	Cardiothoracic (%)	O & G (%)	General (%)	Ophthalmology (%)	Others*	Total (%)
Yes	0 (0)	1 (6)	2 (14)	7 (44)	5 (19)	15 (17)
No	15 (100)	15 (94)	11 (79)	8 (50)	22 (81)	71 (81)
No answer	0	0	1	1	0	2
Total	15	16	14	16	27	88

O & G Obstetrics and gynaecology

* Other specialties = Plastics, ENT, urology and orthopaedics

Discussion

The 51% response rate to the questionnaire may appear disappointing, although it is somewhat higher than that achieved at The Royal Free Hospital in a study looking at staff perceptions of high-risk groups for blood-borne infections before the introduction of universal precautions (2). In our study, it is possible that the 88 who returned the questionnaires were more concerned about the risks of HBV infection and more likely to have been vaccinated. The results, therefore, may give an overestimate of the overall vaccine uptake rate for surgeons. On the other hand, a high proportion of those failing to return questionnaires were PRHOs and SHOs, most of whom would have been vaccinated as students, since a policy to vaccinate new UMDS students was introduced in 1989. Failure to return questionnaires may, perhaps, have been the result of an unsatisfactory internal postal delivery system for junior doctors in the Trust.

Concern must be expressed that despite attempting to adhere to the DoH recommendations, 15% of surgeons claimed not to have had a full course of HB vaccine and, if non-responders are included, about 20% of surgeons working in the Trust who responded to the questionnaire may be inadequately protected.

Advice relating to timing of booster doses appeared not to have been given to just over one-third of those receiving a full course of vaccine and, from comments made on the questionnaire, it appeared that many of the surgeons had been confused by varying advice given by different occupational health departments in the different hospitals in which they had worked. This emphasises the need for adhering to the DoH recommendations regarding booster doses (3). We have previously expressed the view that those developing a satisfactory immune response need not be boosted until 10 years after their primary course (4); such a policy, if recommended, would reduce the workload both for occupational health departments and laboratories.

The importance of complying with the DoH guidelines is emphasised by the fact that in 1993 alone, four surgeons were identified in England and Wales who had transmitted HBV to their patients (J Heptonstall, personal communication). Trusts must appreciate that failure to comply with the DoH's recommendations may have medicolegal consequences.

It is, perhaps, unrealistic to expect surgeons to report all sharps injuries but, although those with vaccine-induced responses may be reassured that they are not at risk of acquiring HBV, they are at risk of other blood-borne viruses such as hepatitis C (HCV), HIV, and perhaps other, as yet unidentified, pathogens. It is important, therefore, that there should be no relaxation in standards of infection control in those surgeons who respond to hepatitis B vaccine.

HIV and HCV are considerably less infectious than HBV. Although no surgeon has been reported as having seroconverted to HIV-1 after a specific occupational exposure, 10 surgeons (four of whom worked in Sub-Saharan Africa) have been reported as possibly

having acquired infections occupationally (5). Although the seroprevalence of HIV-1 in the UK is still relatively low, a figure of 2.4% has been reported in an accident and emergency department in a London teaching hospital (6) and up to 0.5% of pregnant women attending antenatal clinics in Inner London are HIV positive (7).

Less is known about the risks of acquiring and transmitting HCV in surgical practice but the risks of developing severe chronic liver disease after infection by HCV are appreciable. Enhancing knowledge about the risks of blood-borne infections among surgical staff might be achieved by ensuring that this issue is addressed as part of their CME programme.

Many medical and dental schools have been vaccinating students against hepatitis B on entry for some considerable time. The recent recommendations of the Committee of Vice-Chancellors and Principals (CVCP) that this should be carried out in all schools in Britain should effectively ensure that most students are already immune before commencing their studies, and those who are at risk of transmitting infection pursue an alternative career. However, it will be some time before this initiative results in surgical staff being protected against HBV and, in the meantime, it is essential to ensure high vaccination uptake rates among those in post and all hospitals should establish clear policies for minimising the risk and for the management of sharps injuries.

The results of our study may not be representative of findings elsewhere; however, the study shows that there is considerable room for improvement. We would like to suggest that other hospitals audit their vaccination uptake rates, particularly those sited in inner city areas which provide care for patients where there is a high prevalence of blood-borne virus infections.

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