

Relevance of implementation of institutional policy to protect health care workers exposed to Hepatitis B virus (HBV) or Hepatitis C virus (HCV) –contaminated blood or body fluids: experience from a tertiary care liver centre in India.

Ekta Gupta¹, Pragya Agarwala¹, Supriya Mahajan¹, Lejo Joy², Girish Chandra², Shiv Kumar Sarin³

Departments of ¹Clinical Virology, ²Hospital Administration, ³Hepatology Institute of Liver and Biliary Sciences, New Delhi, India.

BACKGROUND

- Healthcare workers (HCWs) are at a very high risk of occupational exposure to blood borne pathogens, predominantly human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV).
- The rates of transmission of these viruses vary largely from around 30% for HBV to 1.7-3.3% for HCV and 0.3% for HIV.
- With the availability and implementation of HBV vaccination in India, the rates of infection have declined, though the vaccination status of HCWs remains suboptimal.
- In developing countries, 40–60% of HBV infection among HCWs was attributed to NSI, while in developed countries the attributed fraction was less than 10% due to vaccination coverage.
- Most of the patients coming to or admitted in the Institute are either HBV or HCV infected.
- Therefore, the aims of this cross-sectional study were to investigate the prevalence, factors for NSI and to demonstrate the sero conversion rate after exposure to high risk patients (with history of HBV or HCV infection).

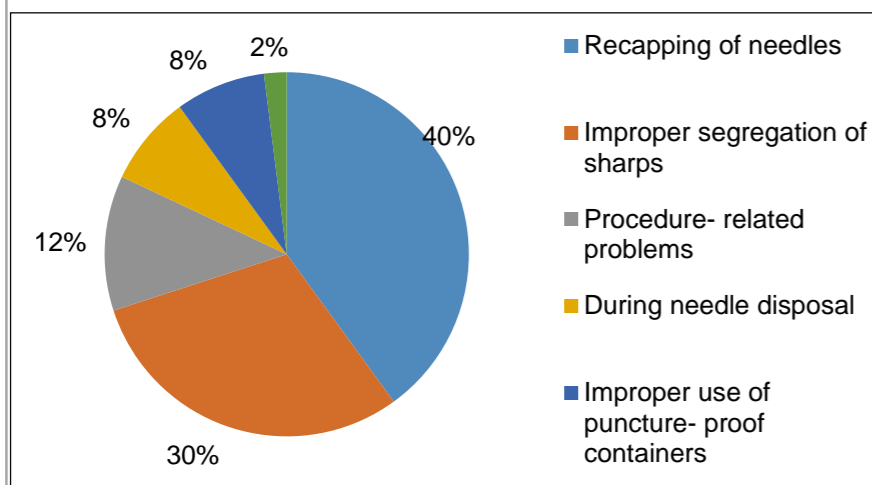
METHODS

- The institute has a well documented protocol to protect HCW from blood borne viruses (BBVs) in the form of a well structured pre and post exposure prophylaxis policy.
- At the time of recruitment through a self designed questionnaire, information regarding HBV vaccination, knowledge, attitude and practices (KAP) towards BBVs is obtained.
- NSI are reported and Post exposure prophylaxis (PEP) is given as per policy.
- A detailed documentation of all NSIs occurring in the institute is maintained and HCW is followed up for one year to check for sero conversion.
- A questionnaire was obtained from the HCW after follow up that collected information regarding various factors that were protective against NSI.
- This prospectively maintained database between 2010 and 2016 was analysed.
- Multiple linear regression analysis was performed to assess the relationship between various factors that protected the HCW from NSI at the workplace.

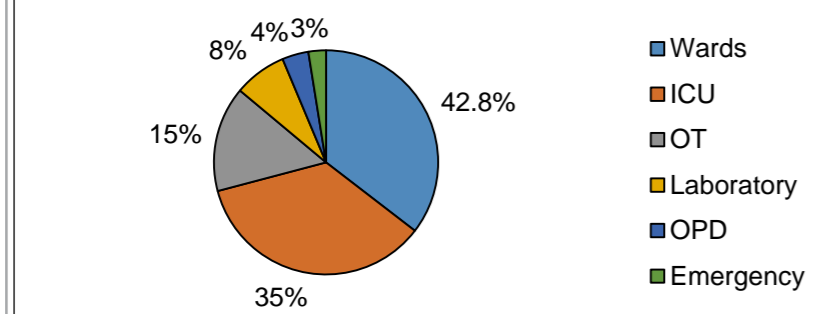
RESULTS

- A total of 876 HCWs were analysed : 266 doctors, 335 Nurses, 154 Technicians, 121 non technical support staff.
- Mean age : 35.6 (SD ± 13.4) years.
- 57% were females.
- 740 (84.4%) gave a history of complete vaccination to HBV.
- 63.6% HCWs were immunized to HBV with anti-HBs titres more than 10 mIU/ml.
- Two HCW (0.2%) were found to be non-responders. They both were HBsAg positive and adequate clinical care was offered. None of the HCWs were positive for HCV and HIV.
- Overall 103 reported incidences of NSIs occurred, majority were in doctors (43.6%) and were mostly related to procedures. Other HCW with NSI were 31 (30%) nurses, 24 (23.3%) general duty assistants and 3 (2.9%) laboratory technicians.
- High risk exposure was seen to HBV infected patients in 37 (35.9%), to HCV infected in 22 (21.3%) and HIV infected in 1 (0.9%).
- Out of 37 HCWs experiencing NSI to HBV exposure: 2 were given HBIG rest were adequately immunised.
- Out of 22 HCV exposure none were started on antivirals based on negative HCV RNA at 3 weeks.
- HIV exposure was managed with PEP as per policy.
- None of the HCWs seroconverted (sero conversion rate, 0%) after 1 year follow-up.

Causes for NSI : n= 103



Area Wise distribution of NSI

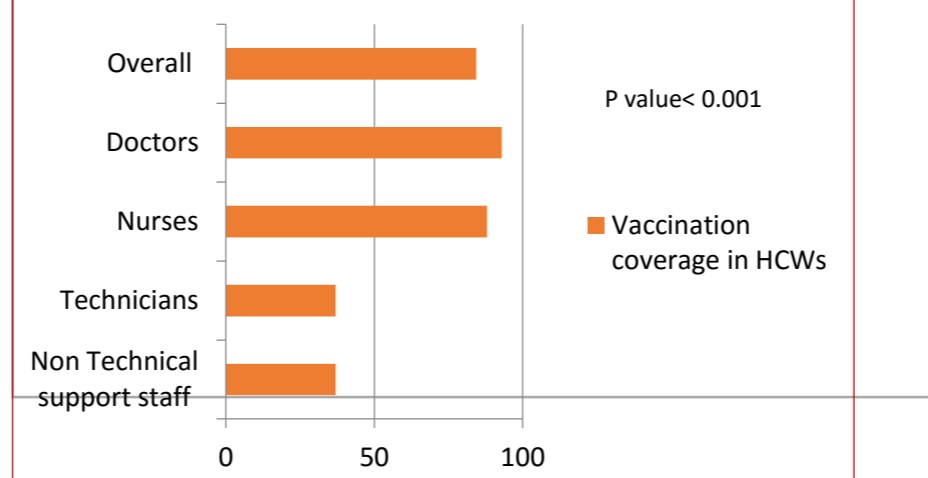


Maximum NSI incidents in wards (42.8%)
Most common cause was recapping of needle (40%)

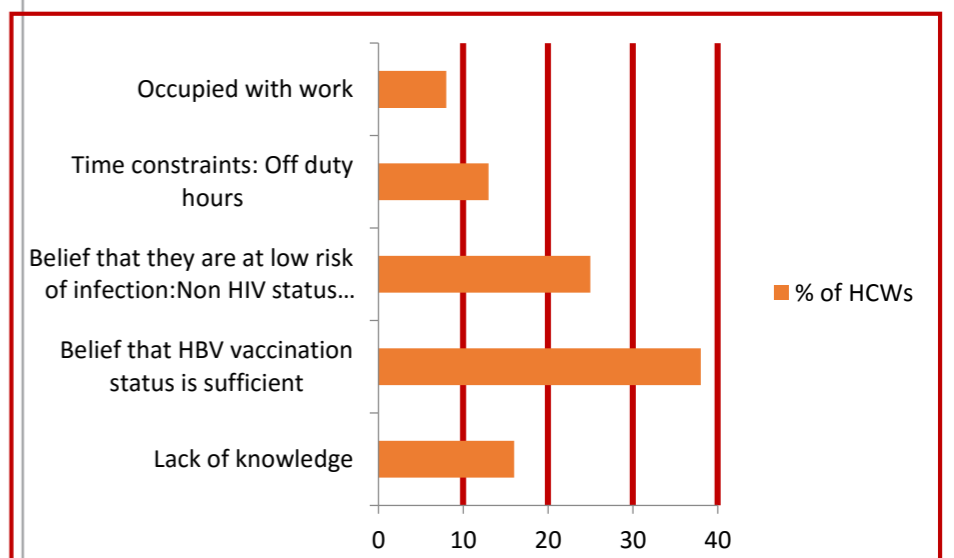
KAP scores in different groups of HCWs

	Knowledge			Attitude	Practice
	HIV	HCV	HBV		
Nurses (n=41)	66%	58%	66%	72%	86%
GDA (n=43)	65%	53%	41%	51%	73%
Lab. Tech (n=29)	75%	70%	77%	68%	84%

Vaccination coverage in HCWs



Possible reasons for non-reporting among health care workers (HCWs) experiencing needle stick injuries



CONCLUSIONS

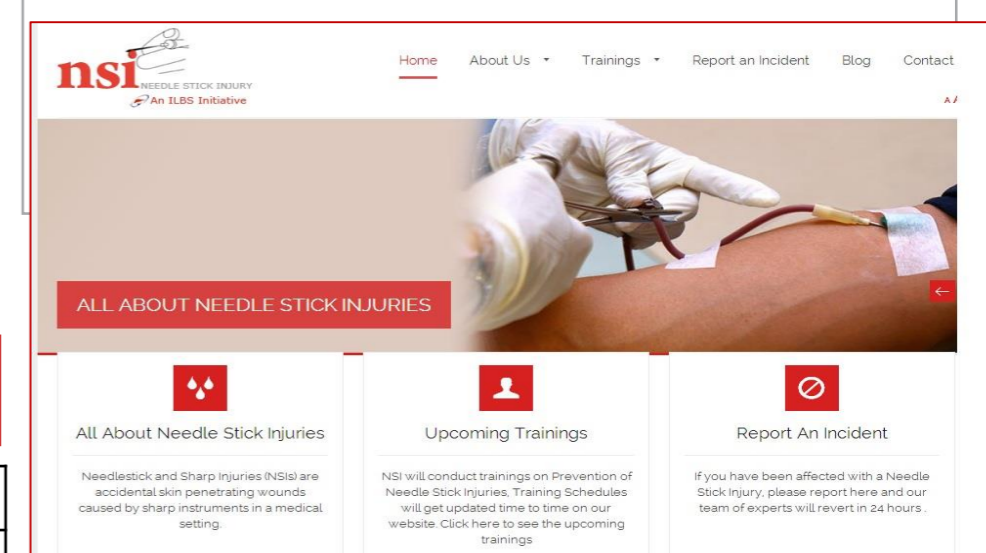
- Each health care facility should have safe working environment for HCWs.
- Safe injection devices and proper waste disposal facilities should be made available in each Health care facility.
- Regular education activities should be done to enhance the level of awareness amongst HCWs especially technicians and other support staff.
- Risk of acquiring HBV and HCV should be emphasized.
- Implementation of a robust protocol and prompt NSI reporting system can protect HCWs from acquiring infection in a high risk working atmosphere.
- Further large-scale and multicenter studies are needed for a more accurate estimation of the risk of transmission of HBV and HCV in HCWs.
- Health policy makers should formulate strategies to improve the working condition for HCWs and increase their adherence to universal precautions.

Effectiveness of different measures to prevent needle stick injury (NSI) among HCWs

Control measure	NSI in HCWs n = 103 (%)	OR	95% CI
Access to safety engineered devices	37(36.8)	0.41	0.21–0.73
Access to personal protective equipment	76(73.7)	0.83	0.49–2.74
Awareness of standard precautions guidelines	46(44.6)	0.63	0.38–1.05
Adherence to infection control policy	64(62.1)	0.72	0.36–2.03
Training in injection safety and appropriate work practices	83(78.3)	0.87	0.46–1.53
>10 Years of experience of HCW	36(34.9)	0.23	0.02–0.71
Available written protocol for prompt reporting of NSI	87(45.5)	0.92	0.48–2.96

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.



A dedicated website for NSI : an initiative by ILBS

Contact Information

NAME: Dr Ekta Gupta
Department of Clinical Virology
Institute of Liver & Biliary Sciences, New Delhi, India
TEL NO: + 91 11 9540950903/9899975974
EMAIL: ektagaurisha@gmail.com