

**Original Article****Occupational Health Screening in South Asian health care sector - Time to wake up!**

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Abstract

Background: *Healthcare workers are exposed to a variety of biological hazards. The World Health Organization (WHO) reports that of the 35 million health-care workers, 2 million experience percutaneous exposure to infectious diseases each year. 37.6% of Hepatitis B, 39% of Hepatitis C and 4.4% of HIV/AIDS in Health-Care Workers around the world are due to needle stick injuries. Health care organizations in the west have well-equipped occupational health centre which not only provide pre-employment checks and screening, but also give specific advice following occupational exposure to blood borne pathogens in line with the recommendations for post-exposure prophylaxis. While industries are required to have occupational centres in their setting, it is ironic that medical institutions and hospitals in India and many south asian countries do not have occupational health screening and effective pre-employment checks for their own employees.*

Material and Methods: *A pubmed search of "occupational health screening for health care workers-was conducted. A search of websites health ministry of ten south asian countries (except Democratic People's Republic of Korea) was conducted to find existing guidelines for occupational health screening of health care worker. An email communication was sent to ministry of health departments of eight south asian countries enquiring for presence of recommendations or guidelines for occupational health screening of health care worker and pre admission screening tests for graduate and post graduate medical courses. A similar e mail was to at least one medical education institution of nine south east asian countries and medical councils of eight south east asian countries.*

Results: *Website search of health ministry and medical councils of south east asian countries did not reveal any existing guidelines for occupational health screening of health care worker. Response to our email questionnaire was obtained from health ministries of only two countries, one medical council and one medical institute. There is a urgent need for the establishment of occupational health services for healthcare workers in India and south asian countries where it is non existant.*

Introduction

Recently, as I was guiding our new postgraduate student to insert a intravenous cannula into a patient in the operation theatre, the new postgraduate student soiled his hands with patient's blood. During a subsequent discussion I asked him if he had been vaccinated against Hepatitis B, and his prompt reply was no. It occurred to me that the situation may be no different in other medical institutions and hospitals across India. The World Health Organization reports in the World Health Report 2002, that out of 35 million health-care workers, 2 million experience percutaneous exposure to infectious diseases each year. 37.6% of Hepatitis B, 39% of Hepatitis C and 4.4% of HIV/AIDS are due to needle stick injuries in Health-Care Workers around the world.¹ WHO is implementing a Global Plan of Action on workers' health and on improving health workers' access to HIV and TB prevention, treatment, care and support services.^{2,3} The Joint Commission on Accreditation of Health Care Facilities (JCAHO) and American College of Occupational and

environmental medicine has set guidelines for occupational health screening⁴ This article summarises current standards of occupational health screening in west and reviews the current practice and research in occupational health in south asian health care sector and to suggest measures for the establishment of occupational health centres including a vaccination programme for health care workers and the creation of a healthy workplace as envisaged by the WHO

Occupational health services for healthcare workers in the west

In western countries, residents, trainees and staff undergo mandatory occupational health clearance before starting work. The centre for disease control in the USA has recommended the following vaccines for healthcare workers -- Hepatitis B, influenza, MMR, Varicella and Tdap.⁵ (See Table 1) .The department of health in the United Kingdom has specific guidelines for new health care workers.⁶ Under these guidelines, medical or nursing students are also considered new healthcare workers.

Table 1: Centre of disease recommendations for health care worker vaccination

Vaccines	Recommendations in brief
<u>Hepatitis B</u>	If you don't have documented evidence of a complete hepatitis B vaccine series, or if you don't have an up-to-date blood test that shows you are immune to hepatitis B (i.e., no serologic evidence of immunity or prior vaccination) then you should: <ul style="list-style-type: none"> • Get the 3-dose series (dose #1 now, #2 in 1 month, #3 approximately 5 months after #2). • Get anti-HBs serologic tested 1–2 months after dose #3.
<u>Flu (Influenza)</u>	Get 1 dose of influenza vaccine annually.
<u>MMR (Measles, Mumps, & Rubella)</u>	If you were born in 1957 or later and have not had the MMR vaccine, or if you don't have an up-to-date blood test that shows you are immune to measles, mumps, and rubella (i.e., no serologic evidence of immunity or prior vaccination), get 2 doses of MMR, 4 weeks apart. For HCWs born before 1957, see the ACIP recommendations at bottom of this table.
<u>Varicella (Chickenpox)</u>	If you have not had chickenpox (varicella), if you haven't had varicella vaccine, or if you don't have an up-to-date blood test that shows you are immune to varicella (i.e., no serologic evidence of immunity or prior vaccination) get 2 doses of varicella vaccine, 4 weeks apart.
<u>Tdap (Tetanus, Diphtheria, Pertussis)</u>	Get a one-time dose of Tdap as soon as possible if you have not received Tdap previously (regardless of when previous dose of Td was received). Get Td boosters every 10 years thereafter. Pregnant HCWs need to get a dose of Tdap during each pregnancy.
<u>Meningococcal</u>	Those who are routinely exposed to isolates of <i>N. meningitidis</i> should get one dose.

Reproduced from, Recommended Vaccines for Health care Workers. Centre for disease control. Atlanta, USA

The Department of Health (DOH) in the UK has two types of pre-employment health clearance. Standard health clearance, which is recommended for all categories of new healthcare worker and additional health clearance for new healthcare workers who will perform exposure prone procedures (EPPs). EPPs are those invasive procedures where there is a risk that injury to the worker may result in exposure of the patient's open tissues to the blood of the worker

Most states in the USA usually have a health policy for dental and medical students to be able to demonstrate adequate immunity against mumps, rubella, Tdap and varicella, and if not vaccinated, be given Hepatitis B vaccine as soon as possible after admission.⁷⁻¹⁰ In a recent survey of 2077 US student programs, 87% programs required measles, mumps, and rubella and 84% programs required hepatitis B.¹¹ A similar occupational health screening is required in Australia.¹² Some institutes in USA require additional clearances like drug screening in select programs like anesthesiology.¹³ The UK medical school guidance states that while admission to medical school is not conditional on the results of blood borne virus (BBV), BBV testing is advised early in the medical course before students can undertake exposure-prone procedures (EPP), and performance of exposure-prone procedures is not needed for provisional registration.¹⁴ However, for dental students, BBV clearance is a must in dentistry before enrolling to ensure patient safety, as even the early training in dentistry involves EPPs.

Occupational health screening in health care sector- Indian and South Asian Face

The medical council of India has a set of graduate medical education rules and postgraduate medical education regulations last amended in 2012.¹⁵ Unfortunately, occupational health screening and recommendations for health care workers are not included. The Government of India has a national policy on occupational safety and health there is even a national institute of occupational health based in Ahmedabad.^{16,17} Even the July 2014

prospectus for MBBS and MD/MS admission to the country's premier institute (All India Institute of Medical Sciences) does not make any mention of the occupational health screening and vaccines required for the new students and postgraduates.^{18,19} India is said to be facing the challenge of integration of occupational health with general health services and delivery of occupational health from medical college hospitals.²⁰

Review of Literature-Occupational health research in south asian health care

A pubmed search of "occupational health screening for health care workers-USA" revealed 359 articles. Similar searches for UK 57, Australia 33, Switzerland 7, France 27, China 24 and for Russia 28 articles were found.

A pubmed search of "occupational health screening for health care workers-India" reported 14 articles. Similarly for Thailand 8, Korea 5, Pakistan 3, Indonesia 2, Bangladesh 2 and Maldives 2 articles were found. "No items were found" for Bhutan, Nepal, Sri Lanka, Myanmar and Timor-Leste. Of these 36 searches, only 14 articles from south asian countries were related to occupational health screening and immunization of health care workers. (India 8, Pakistan 2, Thailand 2 and Korea 2)

In a study of screening 2162 healthcare workers from India for the presence of serological markers of HBV and hepatitis C virus, more than 28% were never vaccinated and 17% were unaware of their vaccination status.²¹ In another study of 600 healthcare workers in India, only 38.8% were fully vaccinated, 20% had one or two doses and about 40% were unvaccinated for HBV.²² In a study of enzyme linked immunosorbent assay of IgG anti-HAV, more than one-third of the medical students in India were seronegative for IgG anti-HAV and according to authors they were at an increased risk of developing HAV infection as a result of occupational exposure.²³

In a study of health care workers in a civil hospital in Pakistan, the prevalence of antibodies to HCV

in health workers are 20 folds higher than health workers in the developed countries.²⁴

An interview based study of 1218 healthcare workers in Thailand reported infection with hepatitis A, hepatitis B and tuberculosis in HCWs were as high as 16.8%, 4.0% and 2.6% respectively. Only 3.5% to 24.3% of HCWs ever read guidelines on the prevention of infection.²⁵

In another prospective study in Thailand, healthcare workers were at risk for tuberculosis infection particularly during their first 12 months of employment.²⁶ In a prospective follow up of 8433 health care workers over 6 years in Korea, the relative risk of developing TB in nurses working in TB related departments was 3.4 times higher than for employees in other departments.²⁷

Survey of Current status of occupational health screening in south asian health care

As this was non interventional a electronic survey no ethical approval was necessary. This was formally stated by the university ethical committee. A search of websites health ministry of ten SEARO countries (except Democratic Peoples Republic of Korea) was conducted to find existing guidelines for occupational health screening of health care worker. An email communication was sent to ministry of health departments of eight south east asian countries (Bhutan, Myanmar and Democratic Peoples Republic of Korea could not be contacted by e mail) enquiring for presence of recommendations or guidelines for occupational health screening of health care worker and pre admission screening tests for graduate and post graduate medical courses. A similar e mail was to at least one medical education institution of nine south east asian countries (excluding Timor Leste and Korea). A search of websites of medical councils of nine south east asian (websites of medical councils of Democratic Peoples Republic of Korea and Timor Leste were not available online) countries was conducted to find occupational health screening guidelines in healthcare sector. Also e mail communication was sent to Bangladesh, Bhutan, India, Indonesia,

Myanmar, Maldives and Nepal and Sri Lanka Medical Councils. (Other three SEARO country medical councils could not be contacted by e mail). Similarly an e mail communication was sent to department of health and medical education institution and medical council in Pakistan and China.

Website search of health ministry and medical councils of south east asian countries did not reveal any existing guidelines for occupational health screening of health care worker. Response to our email questionnaire was obtained from health ministries of only two countries, one medical council and one medical institute in Bangladesh.

Maldives health department stated that pre employment Hepatitis Vaccination exists for health care workers but official guidelines were not available. All health workers in the clinical setting should be vaccinated for Hepatitis B. It is provided through the health care system for those who are not vaccinated. Nursing and Primary Health Care students are provided Hepatitis vaccine. Tuberculin testing is not done. Ministry of health in Sri Lanka stated that Hepatitis B vaccination is being carried out for health care workers in Sri Lanka on request. However it has not been made compulsory as yet. A general medical examination is being done by the University Medical Officer on admission to the university. Students are required to get a chest x-ray and basic blood tests done. However, HBs (Ag) and Tuberculin testing is not being done before admission to MBBS and MD courses and health screening is not being carried out before admission to Post Graduate Medical courses such as MD.

In response to our emails, Bhutan Medical and Health Council stated that there is no existing regulation or guidelines on recommendation for vaccinations for health care professionals in Bhutan. A medical institute we contacted in Bangladesh stated they have full health care screening system before graduate medical or postgraduate admission and existing occupational

health screening tests for healthcare workers include detailed history including family history and tests for venereal disease, tuberculosis, Hepatitis, HIV and X-ray chest.

There was no reply from any other medical council, medical institution or other health ministry we contacted. A web resource (Google –first two pages) search for “occupational health screening for health care workers” in asian countries (search phrase followed by the name of country) did not reveal any relevant searches for health care workers but provided ample reference to workers of other sectors seeking occupational health advice. An online search “immunization for healthcare workers-India“ did not reveal any recommendations or any mention by national institutes or government agencies to follow existing cdc recommendations. On the other hand a similar search relating to west took to major teaching hospitals and organizations advising on occupational health screening and pre employment clearances required.

Thus, as illustrated in the introduction, most vaccinations like Hepatitis B of trainee doctors and health care workers in India may occur months after admission and clinical contact . This may follow after self request or senior advice during training or work. Clearly, there is lack of mandatory occupational health checks before employee begins to work and proportion of health care workers unvaccinated may be up to 40%.²²

Ministry of health and family welfare in India has a national vaccine policy, but occupational health screening of health care worker and required vaccinations do not find a place.²⁸

Time to wake up!

While there are legal provisions for hazardous industries to have occupational health centres, it is ironic that medical institutions and hospitals in India and south Asia do not have occupational health screening and effective pre-employment checks for their own employees. Even the best teaching hospitals, including the premier national institutes or private hospitals do not have occupational health departments, and do not ask

for occupational health clearance before a doctor or support staff member begins work. Although it may not be possible to meet standards of occupational health for every health care organization as in the west

A model of “Vaccine and Join” Programme in South Asia

Medical faculty have been using vaccinations to protect the general public without bothering to protect themselves. Due to magnitude of unvaccinated health care worker, there is an urgent need for starting occupational health services and a “Vaccine and Join” programme in the healthcare sector. We firmly believe that “Vaccine and Join” should be a continuous national programme of immunization for health care workers under the aegis of Department Health and Family Welfare, all related medical and dental councils and other agencies. These guidelines may be in the form of requisite pre-employment checks and required vaccinations such as HBV before starting to work for all doctors and staff.

Table 2 Components of the proposed “Vaccine and Join” programme in South Asia

Develop a reporting system and reference centre for occupational health hazards -*Establishment of Occupational Health Centre in every district* – involve National Institutes and selected state institutes as *Referral Centres*.

List the occupational health hazards of healthcare worker in the country.

Formulate proper guidelines specific to the country in consultation with eminent professionals and professional bodies nationally and internationally. Regularly update these guidelines. Make it mandatory for every new healthcare worker to get occupational health clearance and required vaccines before starting work.

Have wall posters that to remind about vaccinations that are required, and post-exposure prophylaxis guidelines in the exposure prone areas of our hospitals such as operating theatres, casualty and wards.

Issue every healthcare worker with an **Immunization card** – for timely follow up and action.

What Medical and other allied councils need to do

Medical and allied councils must ensure that students and staff are protected against occupational health hazards. Medical and allied councils must pro-actively lead by example in creating awareness and active participation in the vaccination programme for healthcare workers. Table 3 lists the role of medical councils in such a programme.

At the outset, medical, dental and allied councils must issue immediate guidance for appropriate checks and vaccinations required for post graduate students, and all staff likely to be involved in exposure-prone procedures in line with current international standards.

Table 3. Role of Medical and allied councils in “Vaccine and Join”

Issue	Guidance For all medical, nursing and allied students on occupational health hazards and Immunization
Suggest required standard health checks and clearance before they have clinical contact with patients	Suggest Additional health checks and clearance for those who perform EPPs
Ensure pre-employment screening and immunization checks before internship or postgraduate training begins	
Instruct Medical Colleges and other private hospitals to keep a register of occupational health status of their employees. Make this register compulsory as part of a renewal of recognition and award of permission or standards	
Updates of immunization should be part of essential record of every health care workers career.	

Establishment of District Occupational Health Centre

Although a fully fledged occupational health department is ideal in every health care institution, at least medical colleges and select hospitals in every district may be asked to provide for occupational health clearance for doctors and other staff starting work in the locality, and thus at least one *district occupational health centre* must be established in district hospital or selected

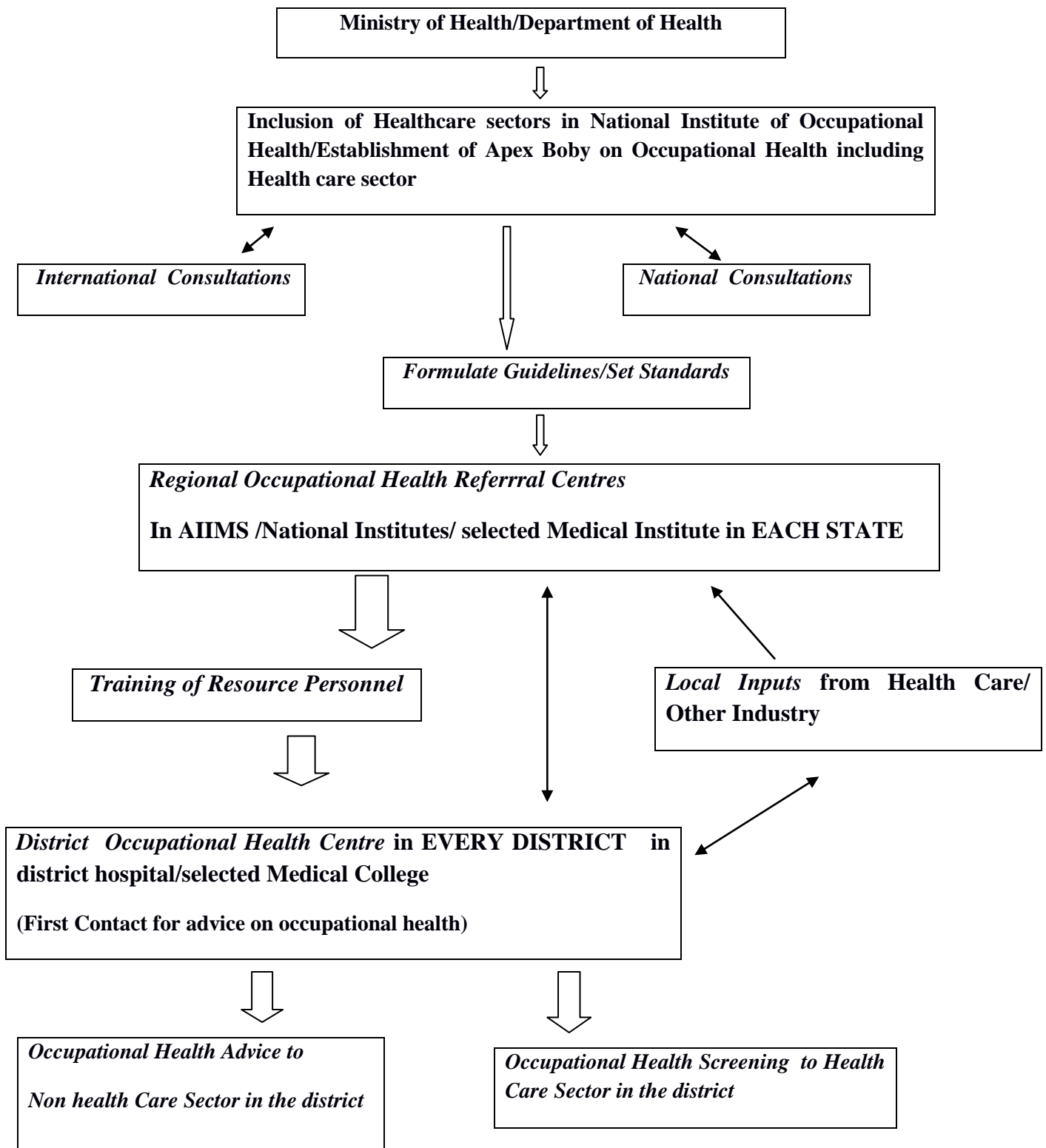
medical college in every district. This facility may even be extended to doctors and other staff about to start work in any private or government hospital in the locality or district. Fig 1 shows the organizational lay out for developing occupational health screening services in India. The same model can be applied in other south asian countries where occupational health screening is non existant. Thus even the smallest hospital in a country like India can be linked to a *District Occupational Health Centre* located in the nearby medical college or a hospital in every district of the country. From these centres, we can provide for occupational health advice for employees of other sectors too.

Conclusions

We need to examine our own practice before we teach and preach other industrial sectors on occupational health. The healthcare sector in India and south asian countries need to wake up to occupational health hazards. There is a urgent need for the establishment of occupational health services for healthcare workers in India and south asian countries where it is non existant. The concerned agencies need to create awareness and develop preventive and post exposure measures for the safety of health care workers and to create healthy workplaces as envisaged by WHO.

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Fig 1.Flow chart for development of occupational health services in South Asian country



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