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The Healthcare Workers' Vaccination – current Policy and Recommendations

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ABSTRACT

Healthcare workers (HCW) are at an increased risk of acquiring vaccine preventable diseases (VPD) due to their higher patient exposure at the workplace. In this context, they form an important target population for vaccination. The authors of this article wanted to explore into the history of vaccination, the risk profile of the health care workers and the current vaccines recommended for the health care workers. Looking forward, vaccine uptake among the healthcare workers can be improved by measures such as conducting periodic annual health check ups and establishing written hospital vaccination policies.

INTRODUCTION

As compared to the general population, health care workers (HCW) are at a higher risk of acquiring infectious diseases such as hepatitis B, influenza, measles, mumps, rubella, pertussis and varicella from their patients and hospital surroundings [1]. They form an important target group for vaccination and can raise an effective barrier against infectious diseases. The objective of vaccinating a health care worker is to protect the workers at high risk of exposure, their families as well as their peers and patients whom they cater to. There have been conflicting opinions on the need for vaccination and vaccine hesitancy among these workers are on the rise. This specially raises concern given their role as trusted sources of information for the general public. In a previous editorial article written by the authors we had put forth the importance of preserving the health of these valuable human resources and questioned if the healthcare workers were healthier than the patients they provide for [2]? One of the time tested means of ensuring this is vaccination and this article explains about the various recommended vaccines advised for a HCW and the concerns surrounding them.

How has vaccination been important, historically?

Vaccination has been touted as the single most important medical advance credited with preventing illnesses and saving more lives in the last hundred years than any other invention of mankind [3]. We have come a long way from the times of Sir Edward Jenner who had conducted his experiments on his gardener's young child James Phipps. Modern ethical principles were not of concern during those times were millions of lives were at stake due to small pox. However, nowadays a vaccine takes the long and arduous route of passing through several clinical trials before it sees the light of day. Vaccines benefit not only the HCW, their family, their co-workers and protect their patients, but also the institution that they work in by reducing rates of sickness absenteeism at the workplace. This ultimately contributes to the global eradication of vaccine-preventable diseases (VPD).

Why are HCW Particularly Vulnerable?

The recent COVID-19 pandemic once again exposed the vulnerability of the HCW to infections and diseases. Several of them have lost their lives in their line of duty yet what remains starkly evident is the inevitable conclusion that the onus of their health is in their hands alone. In the 17th century when plague was the most feared disease in the world, we had 'plague doctors' who tended to the victims wearing long covered coats and bird like beaks on their faces. These outfits were worn to supposedly purify the poisonous air while walking down the

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streets of Europe [4]. We are now living in similar times, with the pandemic forcing health care workers to be fully donned in hazmat suits and personal protective equipment (PPE) to prevent both the spread of SARS-CoV-2 infection and to protect themselves and their families. Caring for infectious patients and handling infectious material at work increases the overall risk of HCW to develop several VPD such as hepatitis A, B and C, varicella, pertussis, influenza, measles, mumps, rubella, tuberculosis and more recently COVID-19 [5].

Who is to Receive Vaccinations?

The Centers for Disease Control and Prevention (CDC) recommends all health care providers working in hospitals, health departments, private clinics, nursing homes, schools, laboratories and emergency medical personnel to be provided with immunizations, including students as well as health volunteers. The recommendation for immunizations should be based upon their job description and their risk of exposure to the infection.

What are the Vaccines Recommended for HCW?

Table 1 outlines the most important diseases that HCW must be vaccinated against according to the CDC, the World Health Organization (WHO) and several other health organizations [6, 7].

Table 1. List of vaccinations recommended for a healthcare worker.

Vaccine	Category of staff	Schedule	Route	Remarks
Hepatitis B	Direct patient care- direct contact with patients' blood or blood stained body fluids.	3 dose vaccine (0,1,6 months)	1ml Intramuscular (IM), Deltoid	Hepatitis B surface antibody testing(anti- HBs) 1-2 months after 3rd dose. Re vaccination for non-responders with 1 dose
Influenza	Direct patient care	Annual vaccination against influenza	Inactivated injectable vaccine – IM Live attenuated vaccine- intranasally	Live attenuated influenza vaccine to non-pregnant healthy HCW and inactivated Injectable influenza vaccine for those in contact with severely immunocompromised individuals(such as stem cell transplant recipients) This vaccine has been mandated for all healthcare workers from Apr 8th, 2022 in Australia.[7]
Measles, mumps and rubella(MMR)	Direct patient care, Laboratory and pathology staff	2 doses of MMR vaccine, 4 weeks apart if no laboratory evidence of disease or immunity	Subcutaneously(SC)	2 doses of MMR in case of an outbreak of measles or mumps and 1 dose during an outbreak of rubella
Varicella	Direct patient care and/or those who are non-clinical staff; staff with regular patient contact	2 dose of varicella vaccine given at least 28 days apart(4 WEEKS)	0.5 ml, SC	Not required for those with definite history of varicella or herpes zoster(shingles) in the past
Tetanus/ Diphtheria/ Pertussis (Td/ Tdap)	Direct patient care, laboratory and pathology staff(including mortuary)	One dose of Tdap irrespective of previous dose of Td and repeat Td or Tdap boosters every 10 years	IM	Pregnant HCW should receive Td or Tdap during every pregnancy.
Meningococcal		MenACWY and MenB vaccine	IM	Especially for microbiologist who are routinely exposed to N. meningitidis. Booster for MenB after 1 year and thereafter every 3 years. Booster for MenACWY every 5 years.
BCG	Direct patient care esp maternity and paediatric patients, working with immunocompromised patients	One dose, no booster required	0.1ml, ID	Only for HCWs working in areas where multi-drug tuberculosis is prevalent, strong likelihood of infection exists and comprehensive infection control precautions have failed.
COVID-19 vaccine*		2 doses at least 4 weeks apart, booster dose required	Depending upon the vaccine	All healthcare workers
Hepatitis A		Two doses 6-12 months apart		Not routinely recommended
Typhoid vaccine		One dose, booster every 2 years Two dose >4 weeks apart Oral vaccine: 4 doses on alternate days. Revaccinate very 5 years.	0.5 ml, IM 0.5ml, SC	Workers in microbiology laboratories who frequently work with Salmonella TYPHI
Polio vaccine	Direct patient care, laboratory and pathology staff and for staff routinely handling faecal specimens	Booster dose every ten years	Oral drops	Booster to be taken every ten years.

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*According to the WHO

For certain vaccines, the risk of exposure for hospital staff is very low. Therefore, routine immunization is not recommended for all. However, for those staff handling or conducting research on specific organisms or working in high risk settings, vaccination may be justified. According to the manual suggested by the National Health Service (NHS) for its healthcare and laboratory workers, these include vaccines against Hepatitis A, Japanese Encephalitis, cholera, meningococcal ACW135Y, smallpox, tick-borne encephalitis, typhoid, yellow fever, influenza, varicella, rabies and anthrax [8].

Recent Developments Following the Pandemic

There was an unprecedented level of public interest following the development of the COVID-19 vaccines. Everything from the vaccine trials and its safety monitoring was discussed in great detail in the mass and social media platforms over the world. At this juncture, the Indian government employed a very unique strategy for advocating COVID-19 vaccines by making them initially available only to the frontline workers; especially, the health care workers. One among the many reasons for this move was to tackle the widespread public mistrust in the hastily developed vaccine and to build confidence among them. In a study reported among 1971 HCW in the USA, it was found that 1 out of every 23 participants were hesitant to take the COVID-19 vaccines. This hesitancy was observed to be even higher in India where studies showed that less than half of the HCW were willing to take the vaccine when they were initially introduced and one-third agreed to the vaccine only in the absence of any side effects [9].

Reasons for Poor Vaccine Uptake

Despite the greater focus on vaccines and their ability to save millions of lives, there has been a general lackluster response from the health care workers. In case of Hepatitis B, the risk of acquiring this infection in health care settings is well known. For every percutaneous exposure, the risk of infection to Hepatitis B and C is 30% and 3% respectively [10]. Despite 90-95% protection by the Hepatitis B vaccine, its coverage among health care workers range from 18% in Africa to 77% in Australia [11]. In a study published in 2008, conducted among HCW in a tertiary care hospital in Delhi, only 55.5% of workers were vaccinated against Hepatitis B [12]. The coverage also varied among different cadres of health professionals according to another study; coverage among doctors was 47.5%, 29.9% among nursing staff, 25.2% among laboratory staff, 18.4% in laundry staff and 9.4% among the sanitation staff [13]. Major reasons for this tepid response could be the desire to avoid “unnecessary” vaccines, concern about side effects and the false belief that their risk of acquiring the disease is very low. There is also no uniformity in the policies concerning vaccination in a health care setting and it varies widely between countries and between organizations within a country as well.

How to Ensure Vaccine Uptake?

Mandating vaccination for continuing employment is one way to ensure that a health care worker takes all the necessary vaccines. However, it does not address the issue of vaccine hesitancy and also impinges on their personal autonomy in this matter. All new employees should undergo a pre-employment checkup wherein apart from the details of their occupational injuries and existing co-morbidities, there should be documentation of their vaccination status. Existing employees of a health care institution should have annual medical check-ups to ensure that their immunization status is up-to-date. However, it is not recommended that serological testing be undertaken for every employee as it is not considered to be a cost-effective exercise. While hospital mandates may improve compliance regarding vaccinations, voluntary compliance is the way to go. After all, the Hippocratic Oath of non-maleficence (i.e., first, do no harm must be foremost in the minds of every HCW). They are duty bound and ethically liable to protect every unsuspecting patient who walks inside the health care establishment from deadly nosocomial infections.

CONFLICT OF INTEREST

The authors declare they have no conflict of interests.

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