



Vaccinations among medical and nursing students: Coverage and opportunities



Pierre Loulergue^{a,b,c,*}, Odile Launay^{a,b,c}

^a Université Paris Descartes, Paris Sorbonne Cité, France

^b INSERM, CIC BT505, France

^c Assistance Publique Hôpitaux de Paris (AP-HP), Groupe Hospitalier Cochin Broca Hôtel Dieu, CIC de Vaccinologie Cochin-Pasteur, Paris, France

ARTICLE INFO

Article history:

Available online 4 February 2014

Keywords:

Vaccination
Coverage
Healthcare students

ABSTRACT

Healthcare students are a specific subgroup of healthcare workers as they are often not identified by the occupational medicine systems in healthcare facilities, because of their shared time between hospital wards and universities. Nevertheless, they should comply with the same vaccination recommendations as employed healthcare workers because they are in close and repeated contact with patients. Occupational immunization recommendations may vary between countries, but always include vaccine-preventable diseases that might lead to nosocomial outbreaks and/or fatal outcomes for healthcare workers or patients. Studies conclude that vaccine coverage is too low in healthcare students, and that they are often not aware of their possibility to be vectors of infections to frail patients. Efforts should be made to educate medical and nursing students on vaccines, to convince them of the utility of immunization and to offer them an increased access to occupational vaccinations in hospitals and universities.

© 2014 Elsevier Ltd. All rights reserved.

1. Introduction

Healthcare workers (HCWs) is an heterogeneous group of professionals, including physicians, nurses, pharmacists, midwives, dental professionals, laboratory technicians, administrative staff, but also healthcare students. Healthcare students are a specific subgroup of HCWs because they are young and less aware of the existence of their occupational risk of infection, and also because they are part time workers in hospitals. As they share their time between hospital and university, they are often not considered as HCWs and not well identified by hospital administration as they are not employees. Besides, occupational medicine cannot follow them up as they depend from the university and they may work in several hospitals during their training.

Nevertheless, healthcare students should comply with the same vaccination recommendations as employed HCWs because they are in close and repeated contact with patients.

We will focus this review on immunizations in medical and nursing students, and analyze subsequently the risk of infection for healthcare students, the immunization recommendation

and vaccine coverage data, knowledge and attitudes, and the opportunities for the future.

2. Review methods

A systematic PubMed search was conducted in July 2013 to identify English research articles evaluating vaccine coverage, knowledge on occupational vaccination in healthcare students. Bibliographic data were searched using PubMed database for the 1980–2013 period with the following keywords: healthcare students, medical students, nursing students, vaccination, immunization, occupational medicine, vaccine policy, vaccine coverage, coverage of vaccination, nosocomial outbreak, influenza, pertussis, measles, mumps, rubella, hepatitis B, hepatitis A, meningococcal disease, varicella, diphtheria, poliomyelitis and tuberculosis. Articles were excluded if they were not concerning occupational vaccines for HCWs. Seventeen articles on occupational vaccinations in healthcare students have been selected for the review.

3. Risk of vaccine preventable infection in HCWs and students

Because of their contact with patients or infective material from patients, many HCWs are at risk for exposure to vaccine-preventable diseases. They also are able to transmit those diseases to their patients and contacts, that may result in fatal outcomes

* Corresponding author at: CIC de Vaccinologie Cochin-Pasteur, 27, rue du faubourg Saint Jacques, 75014 Paris, France. Tel.: +33 1 5841 1936; fax: +33 1 5841 2910.

E-mail address: pierre.loulergue@cch.aphp.fr (P. Loulergue).

and/or costly nosocomial outbreaks. Those risks are well established for diseases such as influenza [1], hepatitis B [2,3], pertussis [4], tuberculosis [5] and measles [6]. Students may be involved in such outbreaks, especially for measles and rubella [7–10]. Therefore, healthcare students working directly with patients or handling material that could spread infection, should get appropriate vaccines to reduce the chance that they will get or spread vaccine-preventable diseases, especially to susceptible patients who themselves may not be able to develop protective immunity after vaccination (e.g. immunosuppressed patients), may not be eligible for vaccination (e.g. pertussis vaccine for neonates or live attenuated vaccines for immunocompromised hosts and pregnant women), or who may simply be unvaccinated or opposed to vaccination. Immunizations of healthcare students are justified by the triple goal to protect themselves, but also to indirectly protect their patients and their family members; and constitute a major infection prevention measure.

4. Vaccine recommendations for healthcare students

The specific occupational infectious risks of the HCWs justify the establishment of specific vaccine recommendations for those who directly provide care or work in institutions that provide care to patients. In the United States, recommendations are edicted by an advisory committee of the Centers for Disease Control and Prevention [11], whereas Europe does not have specific recommendations for HCWs at the European Union level [12]. In Europe, recommendations are mainly established by national ad-hoc expert committees, published by the national health authorities and spread among the medical community. They might also, in some countries like Greece and Switzerland, be developed by local expert committees and/or scholarly societies [12]. They depend on national policies and differ between countries, but occasionally are used almost universally because of a high perceived risk. It is the case for vaccinations against hepatitis B and influenza. Some other vaccinations are not recommended worldwide for HCWs like measles, tuberculosis (BCG), diphtheria, tetanus, poliomyelitis, varicella, meningococcal disease, mumps, rubella and hepatitis A [12].

The immunization recommendations can assist hospital administrators and infection-control practitioners in optimizing infection prevention and control programs. In some countries, such as France, Finland, Slovakia and Slovenia, some vaccinations for HCWs may be mandatory [12]. In this case, enforcement of these requirements is made by the employer (hospitals) and HCWs cannot undertake clinical work unless they provide proof of having received the compulsory vaccinations. Despite all, implementation of vaccination is not full even in the case of mandatory vaccinations, since HCWs may refuse for personal beliefs and be transferred to positions without contact with patients [12].

Healthcare students enrolled in faculties of medicine, or schools of nursing are in close and repeated contact with patients during their clinical training. Although not strictly considered as workers, they should be subject to the same vaccination recommendations targeting professionals that have graduated and are already working [13], as stated by several national immunization guidelines [11,12], and for Europe by a directive [14]. Those recommendations have been upgraded gradually in medical and paramedical schools in the US. However, local vaccine recommendations are not always in accordance with national recommendations: a US nationwide survey in 2008 showed that 59% of the nursing schools and 68% of the medical schools adhere to all the recommendations of the Advisory Committee on Immunization Practice [15]. Moreover, schools' exemption policies may impact vaccine coverage if opt-out of vaccination for non-medical reasons is allowed: 31% of the surveyed schools accepted student-written documents for exemptions [16].

5. Coverage of recommended vaccination in healthcare students and factors associated to vaccination

Data are limited concerning coverage of recommended vaccinations in healthcare students. Published data are presented in Table 1 by year, country and setting. Most of the studies focused on influenza vaccine, reported only self-reported data (which may have a sub-optimal reliability depending on vaccine-preventable disease [17]), and students are not studied as a single group, but as a subgroup of HCWs. Coverages of vaccination against influenza vary between 45 and 61% in recent studies [13,18], which represent fair rates compared to other HCWs [19]. Indeed, coverage rates for influenza are usually found around 40% for physicians, and 20% among nurses in European countries [19]. In the United States, recent figures show a much higher coverage, about 72%, with 92% among physicians and 85% among nurses. No data are presented specifically for healthcare students [20].

For hepatitis B vaccine, coverage rates are rather high. In France, where the vaccine is mandatory before going to clinical training (it has to be provided to the university medical services), coverage rates were high (92% for medical students, 88% for nursing students) [13] although not as high as expected for a mandatory vaccine. Same was found in Belgium, where hepatitis B vaccination is also mandatory for HCWs to get hired, with a coverage rate of 85% [21]. These data indicate that mandatory policy is difficult to achieve among students, partially explained by their hybrid status, between university students and HCWs. In Italy, where the vaccine is recommended but not mandatory for HCWs [22], a study found a high compliance with vaccination (85%) in medical [23] paramedical [24] students.

The case of measles vaccination is particular because the measles vaccine was introduced in the childhood immunization schedule in the early 1980's. Before 1980, people were immunized naturally by getting the disease. When the vaccine was introduced, the incidence of the disease decreased. Students today's coverage rate depends on the implementation of the recommendation among children since the 1980's. Figures vary from 4% [25] to 46% [26]. Studies recently conducted in France and Italy on medical and nursing students showed that up to 25% were not immunized against measles [13,27–29].

With the same process as for measles, pertussis shifted from childhood to the beginning of adult life because of extended coverage of vaccination at birth and booster during childhood, with the acellular vaccine. Despite specific recommendations, vaccine coverage of medical and nursing students is insufficient, ranging from 40 to 69% in 2 published studies (Switzerland 1999–2003, France 2009) [13,30]. Of note, midwifery students, who are even more concerned by the transmission of pertussis to neonates present the same coverage rates [13].

Vaccination rates are not quantifiable for several vaccines, whether natural immunity is too high, like for varicella, with a seropositivity of 92–99% in HCWs [4,30–32], or no data are published, like for meningococcal disease and hepatitis A. Interestingly, an Italian study performed during 2004 and 2010 found that a negative documented or self-reported history of vaccination against hepatitis A in people under 30 years might be reliable enough to avoid a serology [33].

During the last influenza pandemic, many persons, including HCWs, were reluctant to get the 2009 A/H1N1 vaccine because fear of side effects. Coverage rates were highly variable throughout the world, but several studies found that medical and nursing students had a rather high rate of vaccination, around 60% [34,35], compared to 40.3% for HCWs in the UK [36] and 9% for the general European population [37]. The issue of making influenza vaccination mandatory was raised during the 2009 A/H1N1 pandemic because of the

Download English Version:

<https://daneshyari.com/en/article/2402234>

Download Persian Version:

<https://daneshyari.com/article/2402234>

[Daneshyari.com](https://daneshyari.com)