Pandemic Influenza A(H1N1) in Cote d'Ivoire: health-care providers’ knowledge of influenza and attitudes towards vaccination

Daouda Coulibaly1, Ndahwouh Talla Nzussouo2,4, Hervé A Kadio3, Youssouf Traoré1, Daniel K Ekra1, Djibril Chérif1, Paquin D Kouassi1, Anderson K. N’gattia1, Simplice N Dagnan1

1National Institute of Public Hygiene, Abidjan, Cote d’Ivoire
2Influenza Division, U.S. Centers for Disease Control and Prevention, Influenza Division, Atlanta, GA
3Pasteur Institute, Abidjan, Cote d’Ivoire
4Global Disease Detection and Response Program/US Naval Medical Research Unit No. 3, (NAMRU-3)

Abstract
Introduction: During the 2009 influenza A(H1N1) pandemic (pH1N1), different methods were promoted to reduce the spread of influenza, including respiratory etiquette and vaccination. To identify knowledge gaps about influenza and to plan the vaccination campaign against the pandemic in Côte d’Ivoire, a survey was conducted among health-care providers (HCPs) to assess their knowledge about influenza and their willingness to be vaccinated.

Methodology: A cross-sectional survey was performed in the city of Abidjan on 16-18 February 2010, in the three university teaching hospitals, a randomly selected general hospital, and two randomly selected private clinics. In face-to-face interviews, 383 health-care professionals were asked questions about their knowledge of influenza, means of influenza prevention, and their willingness to be vaccinated. Data analysis, both univariate and multivariate, was performed using SPSS.

Results: Willingness to be vaccinated against pH1N1 was 80% (n = 284), and 83% of the HCPs would recommend the vaccine to others. The respiratory mode of transmission of influenza was known by 85% (n = 295) of the participants and 50% (n = 174) believed that seasonal influenza virus and pH1N1 virus were different. In a multivariate model, the factors significantly associated with willingness to receive pH1N1 vaccine were fear of pH1N1 disease (OR = 2.7.38), having only a high school education (OR = 8.28; IC = 2.04-33.60), and feeling at risk to contract pH1N1 (OR = 11.43; IC = 4.77-27.38).

Conclusion: The willingness to be vaccinated against influenza A (H1N1) by health professionals is real.

Key words: health-care providers; influenza; pandemic vaccination

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Introduction
In June 2009, the World Health Organization (WHO) declared a pandemic due to a new influenza A (H1N1) virus that was first confirmed in April 2009 in the United States and Mexico [1].

Following its first detection, the 2009 pandemic influenza A virus (pH1N1) circulated quickly around the globe and by June of the same year was detected for the first time in Abidjan, Côte d’Ivoire. Since then the Ivorian economic capital Abidjan, in the south of the country and with a population of 4,275,527 inhabitants in 2010, continued to record cases of pandemic influenza A (H1N1). As of 10 February 2010, the number of suspected cases of pandemic influenza reached 996 with 9 confirmed pH1N1 cases. In view of the pandemic spread, the WHO Strategic Advisory Group of Experts (SAGE) on Immunization recommended vaccination against the virus, and to prioritize health-care providers (HCPs) to ensure a functional health-care system and to minimize nosocomial infections [2].

Since vaccine availability was limited and expensive, the WHO encouraged vaccine producers to donate vaccine doses to developing countries [3]. Côte d’Ivoire received two million doses of vaccines against pH1N1. This vaccine was intended to be used free of charge in a mass vaccination campaign to vaccinate health-care providers and other high-risk groups, such as pregnant women and people with chronic diseases [2]. At the time the vaccine became available, there were debates about both the severity of the pandemic and the effectiveness of the vaccine. In addition, the Ivorian health authorities had not released any specific information about the vaccine against
pandemic influenza A (H1N1) to health-care providers; this situation posed a real risk in implementing a successful vaccination campaign [4–7]. Reports questioning the efficacy and safety of the pandemic vaccine [8–12] led to low vaccination coverage in health-care providers in some countries [13–15]. In Sub-Saharan Africa, there was a general lack of data on influenza, including both epidemiological data as well as data on seasonal vaccination against influenza [16–18]. Influenza vaccination in health-care providers is poorly documented in Côte d’Ivoire, resulting in uncertainty about the willingness to be vaccinated against influenza among this group.

Prior to the vaccination campaign against the pandemic in Côte d’Ivoire, we conducted a survey among health-care professionals to determine their level of knowledge about the influenza pandemic and their willingness to be vaccinated.

**Methodology**

A cross-sectional survey was conducted in Abidjan from 16 to 18 February 2010, in the three university teaching hospitals, a randomly selected general hospital out of two, and two randomly selected private clinics out of five polyclinics. The study involved three major occupational groups: doctors, paramedical staff (nurses, midwives) and support staff in health services. Using the list of selected hospital staff, a simple random sampling in each group was performed. The subjects included in the study were previously informed about the objectives of the investigation by the management of the hospital. The sample size was estimated at 416 individuals using the software Epi-Table from Epi-Info (version 6) using a confidence level of 95%, an expected prevalence of 47.9% (13) for the willingness to be vaccinated by health-care providers, and assuming a likely non-response rate of 10%. Using a standard questionnaire, subjects participated in a face-to-face interview. The duration of an interview was about fifteen minutes. Information collected included socio-demographics, level of knowledge about both the pandemic and good practices to prevent the spread of respiratory diseases, and willingness to be vaccinated against pH1N1.

The data collected were used to estimate the number and frequency of information on the level of knowledge, attitudes and practices on pandemic influenza; to compare the proportion of participants who had a positive vaccine intention (pH1N1) to those who did not; to measure the association between the intention to vaccinate, the socio-demographic characteristics, knowledge, attitudes and practices of health-care providers; and finally to determine the frequencies of reasons for negative vaccine intention.

This study was approved by the Côte d’Ivoire Ministry of Health and all the participants gave their verbal consent.

**Statistical analysis**

The outcome variable was willingness to be vaccinated. Univariate analysis was used to estimate crude odds ratios (OR) and 95% confidence intervals of potential predictors. The Pearson Chi-square with a p-value ≤ 5% indicating a significant statistical difference or Fisher exact test and exact confidence intervals were used as appropriate. The choice of potential predictors (age, occupation, gender, marital status, education, access to news media, fear of disease, mode of transmission, perceived risk of contracting the disease, knowledge about cases in Côte d’Ivoire, fear of adverse effects of the vaccine) was made based on previously reported studies [19–21].

A multivariate logistic regression analysis was performed to determine the independent effects of factors influencing willingness to be vaccinated. In the multivariate analysis, the potential predictors were introduced as covariates using age above 40 and being a medical doctor as reference levels. The inclusion and exclusion criteria of an independent variable were respectively of p ≤ 0.05 and p ≥ 0.10. Logistic regression was performed with backwards model selection. Interactions between gender and educational level were tested, but found not to be significant.

The adequacy of the final model was tested with the Hosmer and Lemeshow test and residuals were examined for potential outliers. Analyses were performed using SPSS version 17.0.

**Results**

From the 416 persons who were asked to participate in the survey, 383 (92%) accepted. Among the participants (n = 383), 70% were 20 to 40 years of age, 57% were female, and 69% had a university degree (Table 1). Access to news media varied from 97% (n = 372) for television, to 50% (n = 188) for newspapers and 53% (n = 203) for internet (Table 1).

Questions on knowledge of influenza pH1N1 showed that the respiratory transmission mode of influenza was known by 85% (n = 295) of the participants, while only 50% believed that seasonal influenza virus and pH1N1 virus were different. Slightly more than half the participants, 57% (n = 200), knew about pH1N1 cases in Côte d’Ivoire and
only 66% (n = 228) were aware of the existence of a vaccine against it. Questions on attitudes and practices showed that 68% (n = 232) of the respondents feared becoming infected with the pH1N1, and 82% (n = 292) thought they were at risk for contracting it.

The willingness to be vaccinated was 80% (n = 284), and 83% (n = 295) would recommend it to others.

Fewer than half of the participants (41%) said they used disposable tissues when sneezing or coughing and 38% said they washed their hands with soap after sneezing and coughing (Table 2).

The univariate analysis showed that the willingness to be vaccinated was higher among persons with a high school education than among those with a university degree (OR = 2.14; IC = 1.09-4.21), persons fearing pandemic influenza (OR = 1.8; IC = 1.05-3.1), and persons feeling at risk to contract pH1N1 (OR = 5.33; IC=2.93-9.69) (Table 3). Gender, knowledge of pandemic cases in Côte d’Ivoire, and knowledge about adverse effects of the vaccine had no significant effect on the willingness to be vaccinated. In the multivariate model adjusting for age, the fear of infection with pH1N1, and the perceptions of personal risk to contract pH1N1, those with only a high school level education were 8.3 times more likely to be willing to be vaccinated than those with a university degree (Table 4). Results of the multivariate analysis were similar to the results of the univariate analysis.

The main reasons cited for not being willing to be vaccinated among the 61 HCPs who were unwilling to be vaccinated, were lack of information about the vaccine (n = 30, 49%), doubts about vaccine efficacy (n = 16, 26%), and fear of adverse effects related to the vaccine (n = 14, 24%) (Table 5).

**Discussion**

The level of knowledge about pH1N1 among health professionals in this study is variable.

The transmission routes of the disease are known by 80% of the participants, which is likely higher than knowledge in the general population, as found elsewhere [19]. However, knowledge of the virus’s characteristics and the safety of the vaccine are insufficient because only 50% of participants knew that pandemic influenza is different from seasonal

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**Table 1. Characteristics of the health-care providers (HCPs) interviewed (n = 383)**

| Variables               | Total HCPs | No (%)  |
|-------------------------|------------|---------|
| **Age (years)**         |            |         |
| 20 - 34                 | 380        | 144 (37.9) |
| 35 - 40                 | 380        | 120 (31.6) |
| 41 and more             | 380        | 116 (30.5) |
| **Gender**              |            |         |
| Male                    | 380        | 163 (42.9) |
| Female                  | 380        | 217 (57.1) |
| **Educational level**   |            |         |
| High school equivalent  | 363        | 114 (31.4) |
| University degree       | 363        | 249 (68.6) |
| **Profession**          |            |         |
| Doctor                  | 305        | 93 (30.5) |
| Paramedical staff       | 305        | 168 (55.1) |
| Auxiliary staff         | 305        | 44 (14.4) |
| **Access to health information** | | |
| Have a television       | 382        | 372 (97.4) |
| Read newspapers         | 380        | 188 (49.5) |
| Have access to internet | 382        | 203 (53.1) |
influenza virus and 12.2% knew that the vaccine against pandemic influenza has adverse effects. The survey was conducted after the detection of the first pandemic case in Côte d’Ivoire, and eight months after the declaration of the pandemic by the WHO [1]. It was expected that the combined efforts of national and international health authorities in training health-care providers and informing and educating the general population would have led to a better understanding of pH1N1. One of the reasons for the relative lack of knowledge could be the rather low rate of internet access (53%) which to the authors’ knowledge is one of the best channels to get timely information.

The study showed that the majority of the respondents knew that wearing a face mask or using disposable tissues helps to reduce influenza transmission; however, a rather small proportion of participants reported actually using respiratory hygiene measures such as the use of disposable tissues when sneezing or coughing (40.5%) or hand washing with soap after sneezing or coughing (38%). These simple measures are among the best means of preventing influenza transmission [22–25]. These results indicate a low compliance with prevention measures, illustrating that more needs to be done to promote behavioral changes in hospital and clinic settings to prevent influenza transmission [26,27]. The analysis also illustrates that the change in behavior is not necessarily related to knowledge. Indeed, despite the knowledge of prevention of disease through the use of protective masks and disposable tissues when coughing and sneezing, practices thereto (washing hands with soap, wearing masks) are in low proportions. Moreover, these practices are recommended to patients. These data provide information on adherence by HCPs to these methods and also the need for health authorities to promote the implementation of these practices by bringing resources and raising awareness of HCPs to implement these measures in hospitals.

### Table 2. Knowledge, attitudes, and practices of health-care providers towards pH1N1 (n = 383)

| Knowledge about pH1N1                                                                 | Positive answers /total answers | %   |
|--------------------------------------------------------------------------------------------|---------------------------------|-----|
| Informed of pH1N1 cases in Côte d’Ivoire                                                   | 200/352                         | 56.8|
| pH1N1 may be acquired by contact with a person ill with pH1N1                              | 310/332                         | 93.4|
| The pandemic influenza virus (pH1N1) is different from the seasonal influenza virus (sH1N1)| 174/348                         | 50.0|
| Influenza may be transmitted by respiratory droplets                                      | 295/347                         | 85.0|
| Using disposable handkerchiefs when coughing and sneezing reduces the transmission of influenza | 283/333                         | 85.0|
| Existence of a vaccine against pH1N1                                                      | 228/344                         | 66.3|
| pH1N1 vaccine may have side effects                                                        | 37/304                          | 12.2|
| Wearing a face mask helps to reduce the transmission of influenza                         | 233/321                         | 72.6|

### Attitudes and practices towards pH1N1 (persons answering with yes)

| Attitudes and practices towards pH1N1 (persons answering with yes) | Positive answers /total answers | %   |
|--------------------------------------------------------------------|---------------------------------|-----|
| Fear of becoming infected with pH1N1                               | 232/343                         | 67.6|
| Feel at risk of contracting pH1N1                                  | 292/355                         | 82.3|
| Fear of becoming influenza infected at the hospital                | 83/377                          | 22.0|
| Willing to receive pH1N1 vaccination                               | 284/354                         | 80.2|
| Would advise someone else to receive pH1N1 vaccine                | 295/356                         | 82.9|
| Use disposable handkerchiefs for sneezing and coughing            | 154/380                         | 40.5|
| Wash hands after sneezing and coughing                            | 144/379                         | 38.0|
| Instruct patients about hand hygiene after sneezing and coughing  | 284/378                         | 75.1|
Among the HCPs we surveyed, the willingness to be vaccinated against pH1N1 was high. Similar acceptance rates for vaccination have been reported in other studies among the general population (Mexico 80% [28], Canada 69% [29] and 75% [30], and 89% in Kenya [31]). However, our results are markedly different from those in other studies that have reported a low willingness to be vaccinated in HCPs [13–15, 32–35]. This difference could be explained by the period at which certain studies were conducted, especially under the influence of the evolution of the pandemic. The moderate pace of the pandemic has not negatively impacted vaccine uptake intention by participants in our study because 80% of the participants expressed a desire to be vaccinated.

The main factors associated with the willingness to be vaccinated against the pandemic virus from this study are similar to those found in other studies. In fact, the perception of disease severity and the risk of contracting pH1N1 are the main predictors for vaccination [19–21]. Previous vaccination against seasonal influenza was not found in this study to be a

Table 3. Factors associated with willingness to be vaccinated against pH1N1 among health-care providers: univariate analysis

| Variables                                      | N (%) | OR*   | 95% CI** | P-value# |
|------------------------------------------------|-------|-------|----------|----------|
| Age (years)                                    |       |       |          |          |
| 20 - 34                                        | 111 (84.7) | 1.47  | 0.75 - 2.87 | 0.256    |
| 35 - 40                                        | 88 (76.5)  | 0.86  | 0.46 - 1.63 | 0.653    |
| 41 and more                                    | 83 (79.0)  | 1     |          |          |
| Gender                                         |       |       |          | 0.645    |
| Male                                           | 125 (81.2) | 1     |          |          |
| Female                                         | 156 (79.2)  | 0.88  | 0.52 - 1.50 |          |
| Educational level                              |       |       |          | 0.024    |
| High school equivalent                        | 85 (87.6)  | 2.14  | 1.09 - 4.21 |          |
| University degree                              | 185 (76.8)  | 1     |          |          |
| Profession                                     |       |       |          |          |
| Doctor                                         | 66 (72.5)  | 1     |          |          |
| Paramedical staff                              | 131 (81.4)  | 1.65  | 0.90 - 3.04 | 0.103    |
| Auxiliary staff                                | 28 (80.0)  | 1.52  | 0.59 - 3.91 | 0.388    |
| Access to television: yes vs. no               | 276 (80.2)  | 1.16  | 0.12 - 6.27 | 1.000E    |
| Reading newspapers: yes vs. no                 | 147 (83.5)  | 1.55  | 0.91 - 2.64 | 0.103    |
| Access to internet: yes vs. no                 | 152 (77.2)  | 0.65  | 0.38 - 1.11 | 0.111    |
| Existence of pandemic cases in Ivory Coast: yes vs. no | 161 (80.9)  | 1.15  | 0.68 - 1.94 | 0.605    |
| Transmission of influenza via respiratory droplets: yes vs. no | 234 (80.1)  | 1.08  | 0.52 - 2.24 | 0.830    |
| Existence of adverse effects for the vaccine against pandemic influenza A(H1N1): Yes vs. No | 26 (70.3)  | 0.56  | 0.26 - 1.21 | 0.139    |
| Fear of infection with pH1N1: yes vs. no       | 190 (83.0)  | 1.8   | 1.05 - 3.1  | 0.032    |
| Feeling at risk to contract influenza: yes vs. no | 250 (86.2)  | 5.33  | 2.93 - 9.69 | <0.001    |

* = odds ratio unadjusted; ** = confidence interval; # = Pearson Chi-Square Test; £ = Fisher’s Exact Test
positive predictor for the willingness to be vaccinated with the pandemic vaccine, although this has been found in a series of other studies [36–39]. In sub-Saharan Africa and in Côte d’Ivoire in particular, vaccination against seasonal influenza is not common among health-care providers, although quality data on vaccination coverage for seasonal influenza are very limited. In developed countries, vaccination against seasonal influenza is mandatory for health-care providers to reduce morbidity from the disease in health facilities [40,41]; however, in Côte d’Ivoire, there is no similar vaccination policy.

Although the 80% willingness to be vaccinated against the pandemic virus is high, the rate of 20% not willing to be vaccinated is still considerable, taking into account that vaccination is the primary means to prevent the transmission of influenza [40,42]. It is therefore essential to work towards a reduction in refusals to lower than 10% through further education and awareness campaigns. The main reasons given for refusal were the lack of information about the vaccine, doubts about efficacy, and fear of adverse effects, which are also factors mentioned in other publications [8–11]. These attitudes can easily be targeted by making available the data on tolerance and efficacy of the vaccine against pH1N1, which should reassure the skeptics and increase the interest for vaccination [2,43].

This study has some limitations. It was performed only in the city of Abidjan, the economic capital of Côte d’Ivoire, where information is more readily accessible compared with more remote parts of the country. The selection design favours larger hospitals where access to information might again be better. The timing of the actual interviews vis-à-vis current media coverage could also have influenced the outcome of the study. Other limitations are inherent in the method of cross-sectional study and data collection by
interview (response induced by the investigator, unsuitable time for the interview, etc.) including the use of dual-choice questions (yes/no) that does not necessarily mean better understanding of all the answers of the respondents.

Conclusion

In Abidjan, Côte d’Ivoire, the willingness to be vaccinated against influenza A (H1N1) by health professionals is real. Factors influencing favorably for vaccination are perceived risk of acquiring pH1N1 as well as the fear of the disease. Improving the attitude of HCPs for vaccination against pH1N1 requires making information available at their level. It appears necessary for the Ivorian health authorities to educate health professionals on the importance of influenza vaccination in hospital settings to increase the intention of vaccine uptake in the 20% of HCPs not willing to be vaccinated.

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Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

References

1. WHO | World now at the start of 2009 influenza pandemic. Available: http://www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase6_20090611/en/.
2. World Health Organization (2009) Strategic Advisory Group of Experts on immunization - report of the extraordinary meeting on the influenza A(H1N1)2009 pandemic, 7 July 2009, 84: 301-308.
3. WHO (2009) Agreement for donation of pandemic H1N1 vaccine signed. Available: http://www.who.int/mediacentre/news/statements/2009/pandemic_vaccine_agreement_20091110/en/.
4. Huo T-I (2010) The global spread of 2009 H1N1 influenza: a false pandemic? J Chin Med Assoc 73: 60-61.
5. Cohen D and Carter P (2010) Conflicts of interest. WHO and the pandemic flu "conspiracies". BMJ 340: c2912.
6. WHO (2010) WHO Director-General’s letter to BMJ editors. Available: http://www.who.int/mediacentre/news/statements/2010/letter_bmj_0608/en/.
7. Ho T-S, Wang S-M, Liu C-C (2009) Historical review of pandemic influenza A in Taiwan. Pediatr Neonatol 51: 83-88.
8. Torun SD, Torun F (2010) Vaccination against pandemic influenza A/H1N1 among healthcare workers and reasons for refusing vaccination in Istanbul in last pandemic alert phase. Vaccine 28: 5703-5710.
9. Manzoli L, De Vito C, Salanti G, D’Addario M, Villari P, Ioannidis JPA (2011) Meta-analysis of the immunogenicity and tolerability of pandemic influenza A 2009 (H1N1) vaccines. PLoS ONE 6: e24384.
10. Schwarzinger M, Flicoteaux R, Cortarenoda S, Obadia Y, Moatti J-P (2010) Low acceptability of A/H1N1 pandemic vaccination in French adult population: did public health policy fuel public dissonance? PLoS ONE 5: e10199.
11. Suresh PS, Thejaswini V, Rajan T (2011) Factors associated with 2009 pandemic influenza A (H1N1) vaccination acceptance among university students from India during the post-pandemic phase. BMC Infect Dis 11: 205.
12. World Health Organization (2009) Pandemic influenza A(H1N1)2009 virus vaccine – conclusions and recommendations from the October 2009 meeting of the immunization Strategic Advisory Group of Experts. WER 84: 505-516.
13. Chor JSY, Ngai KKL, Goggins WB, Wong MCS, Wong SYS, Lee N (2009) Willingness of Hong Kong healthcare workers to accept pre-pandemic influenza vaccination at different WHO alert levels: two questionnaire surveys. BMJ 339: b3391.
14. Arda B, Durusoy R, Yamaizhan T, Sipahi OR, Taşbakan M, Pullukçu H (2011) Did the pandemic have an impact on influenza vaccination attitude? A survey among health care workers. BMC Infect. Dis 11: 87.
15. Wicker S, Rabenau HF, Bias H, Groneberg DA, Gottschalk R. (2010) Influenza A (H1N1) 2009: Impact on Frankfurt in due consideration of health care and public health. J Occup Med Toxicol 5: 10.
16. Yazdanbakhsh M, Kremsner PG (2009) Influenza in Africa. PLoS Med 6: e1000182.
17. Steffen C, Diop OM, Gessner BD, Hacen MM, Hassar M, Katz MA, (2011) AfriFlu—international conference on influenza disease burden in Africa, 1-2 June 2010, Marrakech, Morocco. Vaccine 29: 363-369.
18. Gessner BD, Shindo N, Briand S (2011) Seasonal influenza epidemiology in sub-Saharan Africa: a systematic review. Lancet Infect Dis 11: 223-235.
19. Lau JTF, Yeung NCY, Choi KC, Cheng MYM, Tsui HY, Griffiths S (2010) Factors in association with acceptability of A/H1N1 vaccination during the influenza A/H1N1 pandemic phase in the Hong Kong general population. Vaccine 28: 4632-4637.
20. Hollmeyer HG, Hayden F, Poland G, Buchholz U (2009) Influenza vaccination of health care workers in hospitals—a review of studies on attitudes and predictors. Vaccine 27: 3935-3944.
21. Riviere S, Gourvellec G, Helynck B, Bonmarin I (2006) Déterminants de la vaccination anti-grippale parmi le personnel de deux centres hospitaliers français en 2004. Bull Epidémiol Hebdo 31: 229-231.
23. Institut National de Veille Sanitaire (2011) Grippe : généralités. Available: http://www.invs.sante.fr/fr/Dossiers-thematiques/Maladies-infectieuses/Maladies-a-prevention-vaccinale/Grippe/Grippe-generalites/Point-sur-les-connaissances.

24. SPIILF - Infectiologie - Grippe (2011) Recommandations pour la prise en charge de tout patient suspect d’infection respiratoire aiguë. Available: http://www.infectiologie.com/site/grippe.php.

25. CDC - Seasonal Influenza (2009) Prevention Strategies for Seasonal Influenza in Healthcare Settings. Available: http://www.cdc.gov/flu/professionals/infectioncontrol/healthe-settings.htm.

26. Masson N and Haeghebaert S (2005) Epidémie d’infections respiratoires aiguës dans un établissement de long et moyen séjour. France: Institut de Veille Sanitaire; 35 p. Available: http://opac.invs.sante.fr/index.php?lvl=notice_display&id=5159.

27. Haeghebaert S (2005) Epidémie d’infections respiratoires aiguës dans un établissement d’hospitalisation pour personnes âgées et dépendantes. France: Institut de Veille Sanitaire; févr. 16 p. Available: http://opac.invs.sante.fr/index.php?lvl=notice_display&id=5151.

28. Esteves-Jaramillo A, Omer SB, Gonzalez-Diaz E, Salmon DA, Hixson B, Navarro F (2009) Acceptance of a vaccine against novel influenza A (H1N1) virus among health care workers in two major cities in Mexico. Arch Med Res 40: 705-711.

29. Kaboli F, Astrakianakis G, Li G, Guzman J, Donovan T, Naus M (2010) Influenza vaccination and intention to receive the pandemic H1N1 influenza vaccine among healthcare workers of British Columbia, Canada: a cross-sectional study. Infect Control Hosp Epidemiol 31: 1017-1024.

30. Dubé E, Gilca V, Sauvageau C, Bouliaane N, Boucher FD, Bettinger JA (2010) Canadian family physicians’ and paediatricians’ knowledge, attitudes and practices regarding A(H1N1) pandemic vaccine. BMC Res Notes 3: 102.

31. Oria PA, Matini W, Nelligan I, Emukule G, Scherzer M, Oyier B (2011) Are Kenyan healthcare workers willing to receive the pandemic influenza vaccine? Results from a cross-sectional survey of healthcare workers in Kenya about knowledge, attitudes and practices concerning infection with and vaccination against 2009 pandemic influenza A (H1N1), 2010. Vaccine 29: 3617-3622.

32. Tanguy M, Boyceau C, Pean S, Marijon E, Delhumeau A, Fanello S (2011) Acceptance of seasonal and pandemic A (H1N1) 2009 influenza vaccination by healthcare workers in a French teaching hospital. Vaccine 29: 4190-4194.

33. Virdesa S, Restrepo MA, Arranz E, Magán-Tapia P, Fernández-Ruiz M, de la Cámara AG Seasonal and Pandemic A (H1N1) 2009 influenza vaccination coverage and attitudes among health-care workers in a Spanish University Hospital (2010). Vaccine 28: 4751-4757.

34. To K-W, Lee S, Chan T-O, Lee S-S (2010) Exploring determinants of acceptance of the pandemic influenza A (H1N1) 2009 vaccination in nurses. Am J Infect Control 38: 623-630.

35. Seale H, Kaur R, Wang Q, Yang P, Zhang Y, Wang X (2011) Acceptance of a vaccine against pandemic influenza A (H1N1) virus amongst healthcare workers in Beijing, China. Vaccine 29: 1605-1610.

36. Seale H, Heywood AE, McLaw M-L, Ward KF, Lowbridge CP, Van D (2010) Why do I need it? I am not at risk! Public perceptions towards the pandemic (H1N1) 2009 vaccine. BMC Infect. Dis 10: 99.

37. Raude J, Caille-Brillet A-L, Setbon M (2010) The 2009 pandemic H1N1 influenza vaccination in France: who accepted to receive the vaccine and why? PLoS Curr 2:RRN1188.

38. Maurer J, Harris KM, Parker A, Lurie N (2009) Does receipt of seasonal influenza vaccine predict intention to receive novel H1N1 vaccine: evidence from a nationally representative survey of U.S. adults. Vaccine 27: 5732-5734.

39. Yi S, Nonaka D, Nomoto M, Kobayashi J, Mizoue T (2011) Predictors of the uptake of A (H1N1) influenza vaccine: findings from a population-based longitudinal study in Tokyo. PLoS ONE 6: e18893.

40. Pearson ML, Bridges CB, Harper SA (2006). Influenza vaccination of health-care personnel: recommendations of the Healthcare Infection Control Practices Advisory Committee (HICPAC) and the Advisory Committee on Immunization Practices (ACIP). MMWR 55: 1-16.

41. Haut Comité de la Santé Publique (2011) Avis du Haut Conseil de la santé publique relatif à l’actualisation de la liste des sujets éligibles à la vaccination contre la grippe saisonnière. Numéro thématique. Le Calendrier des vaccinations et les recommandations vaccinales 2011 selon l’avis du Haut Conseil de la santé publique. Bull Epidemiel Hebd 10-11: 146-150.

42. Tuite AR, Fisman DN, Kwong JC, Greer AL (2010) Optimal pandemic influenza vaccine allocation strategies for the Canadian population. PLoS ONE 5: e10520.

43. Park S-W, Lee J-H, Kim ES, Kwak YG, Moon C-S, Yeom J-S (2011) Adverse events associated with the 2009 H1N1 influenza vaccination and the vaccination coverage rate in health care workers. Am J Infect Control 39: 69-71.

Corresponding author
Daouda Coulibaly, MD, MPH
Institut National d’Hygiène Publique
BP V14, Abidjan
Cote d’Ivoire
Telephone: +225 07 98 47 52
Fax: +225 21 24 69 81
Email: daocoul@yahoo.fr

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