Original article

Human papillomavirus vaccines in Picardy, France: Coverage and correlation with socioeconomic factors

Vaccination anti-HPV en Picardie : couverture vaccinale et déterminants socioéconomiques

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Abstract

Background. – In France, the human papillomavirus vaccine is routinely recommended for 14-year-old females and a ''catch-up'' vaccination should be offered to female adolescents who are between 15 and 23 years of age. Currently, few studies are available on the coverage rates in France. The aim of this study was to evaluate the coverage of the human papillomavirus vaccine and compliance with the vaccination scheme in Picardy, between 2009 and 2010, and to analyze the socioeconomic factors possibly influencing this coverage.

Methods. – We selected a female population that was affiliated with the national health insurance organization, living in the Picardy region of France, and aged between 14 and 23 years on 31st December 2010.

Results. – The coverage rate in the study population with at least one dose of vaccine was 16.8%. A complete vaccination scheme (three doses) was observed in less than 38.9% of them, so only 6.5% of this population had received the complete vaccination. Higher rates of coverage and compliance were observed in girls 14 years of age (65.5%) and if the prescriber was a gynecologist or pediatrician (respectively, 44.7% and 48.1%). There is a negative correlation between coverage and compliance and the percentage of single-parent families and immigrant families by canton area of Picardy. The economic cost of an inappropriate scheme was 1.3 million euros for Picardy in 2009.

Conclusion. – Coverage and compliance rates of human papillomavirus vaccines in Picardy appear to be low. This study suggests that health authorities in Picardy should provide communication and action campaigns to improve these results.
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Keywords: Human papillomavirus; Vaccination; Adolescents; Socioeconomic factors; Picardy

Résumé

Position du problème. – La vaccination contre le papillomavirus humain (HPV) est recommandée en France depuis avril 2007 chez les jeunes filles de 14 ans et en rattrapage chez les jeunes filles de 15 à 23 ans, en prévention des cancers du col de l'utérus. Actuellement, peu de données sur le taux de couverture vaccinale en France sont disponibles. L'objectif de cette étude était d'estimer le taux de couverture vaccinale en Picardie en 2009–2010, l'observance du schéma vaccinal parmi les femmes ayant reçu au moins une dose et de déterminer les facteurs socioéconomiques jouant sur ce taux.

Méthodes. – Il s'agit d'une étude rétrospective s'appuyant sur l'analyse des données de remboursements des vaccins anti-HPV pour les jeunes filles picardes âgées de 14 à 23 ans au moment de la délivrance de la première dose.

Résultats. – Dans la population d'étude, 16,8 % des affiliées ont reçu au moins une dose vaccinale. Le taux de couverture vaccinale avec schéma vaccinal complet a été estimé à 6,5 %. L'observance du schéma vaccinal était meilleure si la jeune fille démarrait la vaccination à 14 ans (65,5 %) et si le primo prescripteur était un gynécologue-obstétricien ou un pédiatre (respectivement 44,7 % et 48,1 %). Il existe une corrélation négative entre le taux de couverture vaccinale et le taux d'immigrés et de familles monoparentales par canton. Le coût de la mauvaise observance du schéma vaccinal a pu être chiffré à plus de 1,3 millions d'euros pour la Picardie en 2009.

Conclusion. – Le taux de couverture vaccinal contre le HPV en Picardie est faible. Ce faible taux constitue une perte de chance tant individuelle que collective. Ce travail souligne l'intérêt de mener des actions avec les acteurs locaux afin d'améliorer ces résultats.
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Mots clés : HPV ; Vaccination ; Adolescentes ; Facteurs socioéconomiques ; Picardie

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1. Introduction

In 2006, two prophylactic vaccines against human papillomaviruses (HPV) obtained marketing approval by the European Drug Agency (Agence européenne du médicament) and have been put on the market. Gardasil[®] (sold by Sanofi Pasteur MSD) is a quadrivalent vaccine targeting the high-risk genotypes 16 and 18 found in 70% of cervical cancers and the low-risk genotypes 6 and 11 [1–7]. Cervarix[®] (marketed by GlaxoSmithKline) is a bivalent vaccine directed against genotypes 16 and 18. These vaccines have demonstrated their efficacy in preventing the onset of precancerous lesions of the uterine cervix caused by HPV types 16 and/or 18 as well as precancerous lesions of the vulva and external genital warts caused by HPV type 6, 11, 16, and/or 18 [8–10].

In France, it is recommended to limit the use of these vaccines to 14-year-old girls and use them as "catch-up" in 15- to 23-year-old young women who have never had sexual relations or at the latest 1 year after their first sexual relations. The vaccination protocol providing maximum efficacy includes three doses to be administered over a 6-month period [11–13]. However, the High Council for Public Health (Haut Conseil en Santé Publique) has recently revised this recommendation and advised that vaccination take place between 11 and 14 years of age [14].

France has no organized HPV vaccination program. Vaccination is therefore opportunistic and left to the initiative of parents or the young women themselves. Yet it has been shown that the epidemiological impact on uterine cervical cancer is highly dependent on the level of vaccine coverage. The only data that can currently be used to evaluate the vaccination coverage in France are those from health insurance information systems. These are data on the reimbursements for the vaccines delivered to insured patients in pharmacies. Few studies have been conducted in France to measure the rate of vaccination coverage. Fagot et al. [15] showed that 37.5% of 14- to 23-year-old women had begun the vaccination in 2007–2008. However, these results are very heterogeneous at the national level: Rouzier showed that in Paris, between 2007 and 2009, only 17% of insured young women received a dose, reporting a 43% compliance rate [16].

The objective of this study was to estimate the vaccination coverage of young women in Picardy, France, for the 2009–2010 period based on data from the reimbursements for vaccine doses delivered and to study certain socioeconomic factors that could be influential.

2. Methods

This was a retrospective study based on the analysis of reimbursements for Gardasil[®] and Cervarix[®] vaccine reimbursements by the Régime Général (health insurance administration for employed personnel), the Régime Social des Indépendants (health insurance administration for the self-employed; RSI), and the Mutualité Sociale Agricole (health insurance administration for agricultural occupations; MSA) in Picardy, France. It examined all young women aged

14–23 years at the time the first dose of the vaccine was delivered, who were affiliated with one of the three health insurance organizations and who had received the first vaccine dose between 1st January 2009 and 31st December 2010. The data were extracted from the Système Informationnel de l'Assurance Maladie (SIAM-ERASME Régional) of the Caisse Régionale d'Assurance Maladie (national health insurance organization; CRAM) in the Nord–Pas-de-Calais-Picardie region and were completed by data from the Picardy MSA and RSI information systems data. All young women born between 1986 and 1996 who had been reimbursed for at least one Gardasil[®] or Cervarix[®] dose between 1st January 2009 and 31st December 2010 were identified. The data transmitted included information on the beneficiaries (anonymous identity number, year of birth, residence canton code), vaccine doses (CIP codes, delivery dates), and prescribers (specialization). Additional data concerning the demography of the female population belonging to one of the three health insurance organizations on 1st January 2010 according to year of birth were transmitted and the Service OSA (Observation, Statistique et Analyse; Observation, Statistics, and Analysis) of the Agence Régionale de Santé (regional healthcare agency; ARS), which provided data on the demography of healthcare professionals according to their specialization and the canton in which they practiced. Four socioeconomic indicators were collected for each canton from national data (INSEE): the percentage of immigrants, the rate of single-parent families, the median income per consumption unit, and the rate of taxable households.

The rate of vaccination coverage by at least one dose was defined as the number of young women who had received at least one vaccine dose during the reference period, divided by the number of young women born between 1986 and 1996 belonging to one of the three health insurance organizations on 1st January 2010.

As for compliance with the vaccine protocol, according to the French Health Authority for Health Transparency Commission (Commission de Transparence de la HAS) through a decree passed on 18 April 2007 and 5 March 2008, a 3-year period for the delivery of the three doses was chosen. Young women having received the three doses or more in less than 1 year were therefore considered compliant and the compliance rate was defined as the number of women having received the three doses or more in less than 1 year among those who received at least one dose. The calculation of the compliance rate only took into account those young women who began the vaccination in 2009 (without taking into account those who began the vaccination in 2010), which made it possible to partially control for a bias affecting the total number of doses received.

In addition, the impact on compliance of the prescriber's specialization and the patient's age at delivery of the first dose were studied. We also examined whether the coverage rate by canton was associated with the percentage of immigrants, the single-parent family rate, median income, and the rate of taxable households.

To calculate the cost of the vaccination, we took into account the price of the vaccine doses (123.66 € for Gardasil[®] and