

# Knowledge, awareness and utilisation of the human papillomavirus vaccine in Durban

Allie N, MBChB, FCOG(SA)

Lecturer/Specialist; Obstetrics and Gynaecology, Nelson R Mandela School of Medicine, KwaZulu-Natal

Moodley M, MBChB, FCOG(SA), MMed, PhD, Specialist Obstetrician and Gynaecologist

Correspondence to: Naseera Allie, e-mail: naseera@mail.com

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## Abstract

**Background:** Human papillomavirus (HPV) is the causative agent of cervical cancers, low-grade cervical lesions, and warts of the genital tract. Since March 2008, a vaccine against HPV has been licensed for use in South Africa to reduce the incidence of HPV. The rationale for undertaking this research project was to establish the knowledge, awareness, and utilisation, of the HPV vaccine, among different healthcare workers.

**Method:** Healthcare providers (100 general practitioners, 50 gynaecologists, 50 paediatricians, 50 medical staff and 50 nurses) working in the private sector, in the Ethekeweni health district in KwaZulu-Natal, were interviewed. Comparisons of awareness among subgroups of healthcare providers were analysed. Associations between awareness and other factors were tested using a chi-square test.

**Results:** Awareness of the vaccine was found to be 89% among healthcare workers, while 70.4% of practitioners informed patients of the availability of the HPV vaccine. Most practitioners (77.9%) have only prescribed the vaccine less than ten times. Gardasil® was prescribed by 46% of healthcare workers. In general, practitioners were unaware that Gardasil® could be prescribed to males (62.9%).

**Conclusion:** Healthcare workers were aware of the HPV vaccine, and prescribed it on request. However, even though practitioners were aware of it, most prescribed it less than 10 times since it was licensed. Knowledge regarding the vaccine is deficient, as practitioners are unaware of its licensed use.

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## Introduction

Human papillomavirus (HPV) vaccines have been licensed for use in South Africa since March 2008. The primary aim of the vaccination is to decrease the incidence of HPV infection in the population. Currently, two vaccines are available in the private health sector. These consist of a bivalent vaccine targeting HPV 16 and 18 (Cervarix®, GlaxoSmithKline), and a quadrivalent vaccine targeting HPV 6, 11, 16, 18 (Gardasil®, Merck, Sharpe and Dohme).

HPV types 16 and 18 are the causative agent in approximately 70% of cervical cancers worldwide. Low-risk HPV types HPV 6 and 11 cause low-grade cervical lesions, and warts of the genital tract. Cervical cancer is the third most common cancer in women, and generally, can be prevented through screening and treatment of cervical intraepithelial neoplastic lesions.<sup>1,2</sup>

Strategies for cervical cancer reduction include cervical screening and HPV vaccination. Health benefits include

a decrease in morbidity and mortality associated with cervical cancer, and a decrease in the psychosocial and financial burden of genital warts and abnormal cytological smears. The effectiveness of the HPV vaccine uptake depends largely upon whether or not healthcare providers advise females to be vaccinated, and if they are able to attain high immunisation coverage.<sup>3</sup> A study in Australia has shown that gynaecologists support HPV vaccination.<sup>4</sup> Other studies have examined family physicians' and paediatricians' attitudes towards HPV vaccination.<sup>5,6</sup> However, to date, no study has been undertaken in South Africa.

The rationale for undertaking this research project was to establish the knowledge, awareness, and utilisation, of the HPV vaccine, among different healthcare workers.

## Method

The research protocol was approved by the University of KwaZulu-Natal (UKZN) Postgraduate Committee and UKZN Biomedical Research Ethics Committee.

The study population consisted of a random sample of 300 healthcare workers. This included 100 general practitioners, 50 gynaecologists, 50 paediatricians, 50 other medical staff, and 50 nursing staff.

Healthcare workers in the Ethekeeni health district in KwaZulu-Natal were interviewed. Representation of other medical disciplines, such as anaesthetics and internal medicine, was also included. The interviews were conducted between July 2010 and December 2010. Participant responses were kept anonymous.

### Data and statistical analysis techniques

Data regarding the number and reasons for refusals, or non-participation, are presented, and where possible, compared to those who participated, to determine any non-response bias. Frequencies and percentages are presented for all categorical data, including 95% confidence intervals.

Comparisons of awareness among subgroups of healthcare providers were analysed using chi-square tests. If significant, pairwise comparisons were made using a Bonferroni adjustment for multiple comparisons. Associations between awareness and other factors, such as demographic, uptake, and beliefs, were established using a chi-square test. A subanalysis of prescribing practices of those administering the HPV vaccine is also presented. Subgroup comparisons and tests of association were carried out using chi-square tests, or exact tests as described above. Data was entered into Microsoft Excel®. All open-ended questions were coded prior to data entry. Analysis was performed with Stata® Version 11 (StataCorp, 2009).

### Results

Three hundred healthcare workers were interviewed, namely 50 gynaecologists (16.7%), 52 paediatricians (17.3%), 99 general practitioners (33%), 49 other medical doctors (16.3%) and 50 (16.7%) nurses. Demographics of the population are shown in Table I.

The results indicated that 93% of healthcare workers were aware of the cervical screening programme in South Africa (Table II). Most nurses (82%) and gynaecologists (76%) informed patients about HPV-related illnesses (Table II).

Subcategory analysis of the practitioners who were aware of the HPV vaccine showed that 78% of gynaecologists, 73% of paediatricians, 73% of general practitioners, 86% of nurses, and 35% of other medical doctors, informed patients of the HPV vaccine. Two hundred and thirty-one healthcare workers (86.5%) prescribed the vaccine on request only. Reasons for not prescribing the vaccine, as well as choice of the specific

Table I: Demographics of healthcare workers

|                           | Frequency | Percentage % |
|---------------------------|-----------|--------------|
| <b>Age</b>                |           |              |
| < 40 years                | 94        | 31.3         |
| 40-60 years               | 159       | 53           |
| > 60 years                | 47        | 15.7         |
| <b>Sex</b>                |           |              |
| Male                      | 167       | 55.7         |
| Female                    | 133       | 44.3         |
| <b>Time practising</b>    |           |              |
| < 10 years                | 94        | 31.3         |
| 10-20 years               | 138       | 46           |
| > 20 years                | 68        | 22.7         |
| <b>Healthcare funding</b> |           |              |
| Cash                      | 103       | 34.3         |
| Medical aid               | 197       | 65.7         |

HPV vaccine that the healthcare workers prescribed, are shown in Table II. Of those healthcare workers who prescribed the vaccine, Gardasil® was given most often (43.3%).

A subanalysis of the awareness of the vaccine among the medical discipline categories, the demographics of the healthcare providers, and a subanalysis of the patients, are shown in Table III. There was no association between age and awareness ( $p$ -value = 0.2). Generally, healthcare workers who treated medical aid patients were more likely to be aware of the vaccine than those treating mainly cash-paying patients (84% vs. 91%,  $p$ -value = 0.07).

Utilisation of the vaccine, among healthcare providers who were aware of it, is shown in Table IV. Most healthcare workers prescribed the vaccine less than 10 times (Table V).

### Discussion

Worldwide, in 2008, the incidence of cervical cancer cases was estimated to be 530 000. Developing countries carry the burden of most of these cases, which account for 13% of all female cancers.<sup>1</sup> Southern Africa is regarded as a high-risk region, with an age standardised ratio of 26.8 per 100 000.

If the national screening policy is properly implemented, it could decrease the incidence of cervical cancer by more than 50%, if it reaches over 75% of coverage, assuming 100% coverage of the population. This screening programme is expected to decrease the cumulative incidence of cervical cancer by approximately two thirds.<sup>7</sup>

**Table II:** Knowledge and awareness of the human papillomavirus vaccine among healthcare workers

|  | Frequency | Percentage (%) |
|--|-----------|----------------|
| <b>Aware of cervical screening programme</b> |           |                |
| Yes  | 280       | 93.3           |
| No   | 20        | 6.7            |
| <b>Aware of HPV vaccine</b>                  |           |                |
| Yes  | 267       | 89             |
| No   | 33        | 11             |
| <b>Informed about HPV vaccine</b>            |           |                |
| Yes  | 181       | 60.3           |
| No   | 119       | 39.7           |
| <b>Vaccine prescribed</b>                    |           |                |
| Yes  | 231       | 86.5           |
| No   | 86        | 13.5           |
| <b>Vaccine used</b>                          |           |                |
| Gardasil®                                    | 100       | 43.3           |
| Cervarix®                                    | 15        | 6.5            |
| Either                                       | 116       | 50.2           |
| <b>Reasons for choice</b>                    |           |                |
| Cost   | 32        | 13.9           |
| HPV coverage                                 | 99        | 42.9           |
| Patient choice                               | 28        | 12.1           |
| All  | 65        | 28.1           |
| Other  | 5         | 2.1            |
| <b>Patients requested vaccine</b>            |           |                |
| Yes  | 133       | 44.3           |
| No   | 167       | 55.7           |
| <b>Own beliefs</b>                           |           |                |
| Effective                                    | 209       | 69.7           |
| Unsure                                       | 37        | 12.3           |
| Media coverage                               | 10        | 3.3            |
| Fear of side-effects                         | 6         | 2              |
| Promotes promiscuity                         | 3         | 1              |
| Expensive                                    | 9         | 3              |
| Not aware of vaccine                         | 26        | 8.7            |
| <b>Patients' beliefs</b>                     |           |                |
| Unaware                                      | 138       | 46             |
| Effective                                    | 119       | 39.7           |
| Believe doctor                               | 16        | 5.3            |
| Media coverage                               | 12        | 4              |
| Promotes promiscuity                         | 7         | 2.3            |
| Expensive                                    | 8         | 2.7            |

**Table III:** Demographics of healthcare workers awareness of the human papillomavirus vaccine

|                           | Yes         | No         |
|---------------------------|-------------|------------|
| <b>Designation</b>        |             |            |
| Gynaecologist             | 50 (100%)   | 0 (0%)     |
| Paediatrician             | 52 (100%)   | 0 (0%)     |
| General practitioner      | 98 (98.9%)  | 1 (1.0%)   |
| Other medical doctor      | 37 (75.5%)  | 12 (24.5%) |
| Nurse                     | 30 (60.0%)  | 20 (40.0%) |
| <b>Age</b>                |             |            |
| <40 years                 | 88 (93.0%)  | 6 (6.4%)   |
| 40-60 years               | 137 (86.2%) | 22 (13.8%) |
| >60 years                 | 42 (89.3%)  | 5 (10.6%)  |
| <b>Sex</b>                |             |            |
| Male                      | 160 (95.8%) | 7 (4.2%)   |
| Female                    | 107 (80.5%) | 26 (19.6%) |
| <b>Time practising</b>    |             |            |
| <10 years                 | 88 (93.6%)  | 6 (6.4%)   |
| 10-20 years               | 121 (87.8%) | 17 (12.3%) |
| >20 years                 | 58 (85.3%)  | 10 (14.7%) |
| <b>Healthcare funding</b> |             |            |
| Medical aid               | 180 (91.5%) | 17 (8.6%)  |
| Cash                      | 87 (84.5%)  | 16 (15.5%) |

**Table IV:** Uptake of the human papillomavirus vaccine among providers who were aware of it

|                           | Yes         | No         |
|---------------------------|-------------|------------|
| <b>Designation</b>        |             |            |
| Gynaecologist             | 48 (96.0%)  | 2 (4.0%)   |
| Paediatrician             | 49 (94.2%)  | 3 (5.7%)   |
| General practitioner      | 89 (90.8%)  | 9 (9.1%)   |
| Other medical doctor      | 15 (40.5%)  | 22 (59.5%) |
| Nurse                     | 30 (100%)   | 0 (0%)     |
| <b>Age</b>                |             |            |
| <40 years                 | 74 (84.0%)  | 14 (15.9%) |
| 40-60 years               | 120 (87.6%) | 17 (12.4%) |
| >60 years                 | 37 (88.1%)  | 5 (11.9%)  |
| <b>Sex</b>                |             |            |
| Male                      | 135 (84.4%) | 25 (15.6%) |
| Female                    | 96 (89.7%)  | 11 (10.3%) |
| <b>Time practising</b>    |             |            |
| <10 years                 | 74 (84.1%)  | 14 (15.9%) |
| 10-20 years               | 107 (88.4%) | 14 (11.6%) |
| >20 years                 | 50 (86.2%)  | 8 (13.8%)  |
| <b>Healthcare funding</b> |             |            |
| Medical aid               | 156 (86.6%) | 24 (13.3%) |
| Cash                      | 75 (86.2%)  | 12 (13.8%) |

**Table V:** Frequency of vaccine prescription by healthcare workers

|                           | Number of times that the vaccine was prescribed |                   |                   |
|---------------------------|---|-------------------|-------------------|
|                           | <10   | 10-20             | >20               |
| <b>Designation</b>        |   |                   |                   |
| Gynaecologist             | 26 (54.1%)                                      | 14 (29.1%)        | 8 (16.7%)         |
| Paediatrician             | 46 (93.8%)                                      | 2 (4.1%)          | 1 (2.0%)          |
| General practitioner      | 81 (91.1%)                                      | 3 (3.4%)          | 0 (0%)            |
| Other medical doctor      | 13 (86.7%)                                      | 1 (6.7%)          | 1 (6.7%)          |
| Nurse                     | 14 (46.7%)                                      | 7 (23.3%)         | 7 (23.3%)         |
| <b>Total</b>              | <b>180 (77.9%)</b>                              | <b>29 (12.6%)</b> | <b>17 (7.4%)</b>  |
| <b>Age</b>                |   |                   |                   |
| <40 years                 | 59 (79.7%)                                      | 15 (20.3%)        | 0%                |
| 40-60 years               | 92 (76.7%)                                      | 11 (9.2%)         | 16 (13.3%)        |
| >60 years                 | 29 (78.4%)                                      | 3 (8.1%)          | 1 (2.7%)          |
| <b>Total</b>              | <b>180 (77.9%)</b>                              | <b>29 (12.6%)</b> | <b>17 (7.36%)</b> |
| <b>Sex</b>                |   |                   |                   |
| Male                      | 107 (79.3%)                                     | 15 (11.1%)        | 11 (8.2%)         |
| Female                    | 73 (76%)  | 14 (14.6%)        | 6 (6.3%)          |
| <b>Total</b>              | <b>180 (77.9%)</b>                              | <b>29 (12.6%)</b> | <b>17 (7.4%)</b>  |
| <b>Time practising</b>    |   |                   |                   |
| <10 years                 | 62 (83.8%)                                      | 12 (16.2%)        | 0%                |
| 10-20 years               | 84 (74.5%)                                      | 13 (12.2%)        | 9 (8.4%)          |
| >20 years                 | 34 (68.0%)                                      | 4 (8.0%)          | 8 (16.0%)         |
| <b>Total</b>              | <b>180 (77.9%)</b>                              | <b>29 (12.5%)</b> | <b>17 (7.4%)</b>  |
| <b>Healthcare funding</b> |   |                   |                   |
| Medical aid               | 121 (77.6%)                                     | 18 (11.5%)        | 2 (2.7%)          |
| Cash                      | 59 (78.7%)                                      | 11 (14.7%)        | 15 (9.6%)         |
| <b>Total</b>              | <b>180 (77.9%)</b>                              | <b>29 (12.6%)</b> | <b>17 (7.4%)</b>  |

Vaccination with the HPV vaccine is beneficial in many ways. It decreases HPV infection, reduces cancer incidence of the cervix, and may possibly decrease the frequency of proposed Papanicolaou smears in the future. In addition, the quadrivalent vaccine offers protection against genital warts. Extensive uptake of the vaccine is essential for it to have maximum clinical impact. The degree of implementation is affected by many factors. These include patient, parent, and healthcare worker attitudes, about the vaccine.

This study found that 70% of healthcare workers informed patients about the HPV vaccine, although

89% of providers were aware of it. This meant that even though they were aware of the vaccine, they did not prescribe it. This could be because specialists of various disciplines are more likely to deal with specific conditions relating to their specialty, or they may not have had enough knowledge about the vaccine in order to counsel patients about it, and to prescribe it.

Even though most clinicians were aware of, and prescribed, the vaccine, the majority (77.9%) only prescribed the vaccine fewer than 10 times since it was licensed in South Africa. Only 7.3% of healthcare providers prescribed the vaccine more than 20 times. Generally, gynaecologists and nurses prescribed the vaccine more than 20 times. This could be due to patients presenting with prescriptions from their doctor, or to the fact that nurses may play a more effective role in counselling, screening, and practising preventative medicine. The longer the clinician was in practice, the more the vaccine was prescribed. This could be due to the fact that these providers have busy practices, or have established a rapport with patients over time.

Most practitioners believed that the vaccine is effective. However, some were wary of the side-effects, and others were unsure of its efficacy. Some practitioners believe that more media coverage is required, and that the vaccine is expensive. The cost of the vaccine, and its availability, are important system-based factors that could inhibit vaccine uptake. Cash-paying patients, in particular, may find it to be expensive. A South African study showed that it is cost-effective for the HPV vaccine to be added to the current cervical cancer screening programme.<sup>8</sup> Therefore, while the vaccination has the ability to decrease the cost of cancer of the cervix for the health system, it can probably also reduce the cost to the patient.<sup>8</sup> A few surveyed healthcare workers believed that vaccination against HPV could unintentionally encourage risky sexual practices among vaccinated patients. There is no evidence of increased promiscuity among adolescents who obtained contraception at school level.<sup>9,10</sup>

Healthcare providers believed that patients were largely unaware of the vaccine. Thirty-nine per cent believed it to be effective. These results indicate that patients need to be counselled with regard to the vaccine. Healthcare practitioners provide patients with important information, and parents value advice about preventative measures, such as vaccines. The HPV vaccination programme's success relies largely on healthcare providers' willingness and ability to recommend vaccination against HPV to their patients.<sup>11</sup>

Most healthcare providers were unaware that Gardasil<sup>®</sup> is registered for use in males. Practitioners who are more comfortable vaccinating females might believe

that vaccination against HPV will impact female health more significantly. These beliefs are not consistent with data that have shown that administering the vaccine to both sexes, rather to females only, is more successful in decreasing the burden of the disease.

A limitation of the study was that private sector-practising practitioners only were interviewed. Ethical considerations were no direct patient interaction, only healthcare providers who consented to participate in the study were interviewed, the questionnaire contained numbers for references, and no practitioner names were recorded. All the obtained information was kept confidential, and was used solely for the purpose of the study.

General awareness of the vaccine among healthcare workers appears to be sufficient. Counselling of patients on the availability of the vaccine, and the importance of practising preventative medicine, seemed to be a concern among healthcare workers. This could be due to time constraints, the inability to discuss the merits of the vaccine with adolescents and their parents, cost issues, or simply that even though healthcare workers are aware that a HPV vaccine exists, they are not counselling patients about it. Many healthcare workers expect patients to ask for the vaccine, and that they have some knowledge of it prior to a discussion on the subject. Patients may not appreciate the long-term need for the HPV vaccine, as there is no immediate gain. Benefits are only detected later in life. Many healthcare workers believe that public education campaigns, involving schools and the media, should take place, so that patients are aware of the vaccine's availability.

Healthcare providers need to be better educated about the available types of the vaccine, and the differences between the licensed vaccines, as well as their safety and efficacy.

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