Journal of Biotechnology & Biomaterials
ISSN: 2155-952X
Shehata and Pater J Biotechnol Biomaterial 2011, 1:4
DOI: 10.4172/2155-952X.1000103e

Editorial Open Access

Human Papillomavirus (HPV) Vaccine: Is it worthwhile?

Marlene F Shehata* and Alan Pater

Department of Cellular and Molecular Medicine, University of Ottawa, Ottawa ON, Canada

Cervical cancer is one of the most common cancers in women. Human Papillomavirus (HPV) is the primary cause of cervical, anal, vulvar, vaginal and penile cancers as well as genital warts. Over 120 types of HPV have been isolated with more than 40 of these types infecting the epithelial lining of the anal and genital tracts [6]. HPV infections can be currently screened using the Pap cytology and the HPV DNA testing [7]. False positive Pap tests can greatly impact the patient's psychological status and is currently costing over $ 244 M/year [10]. Given the huge economic burden associated with Pap cytology and DNA testing, the purpose of this editorial is to discuss the value of HPV vaccines in preventing HPV infections and hence reducing the economic burden of HPV diagnostic testing.

To date, two prophylactic HPV vaccines are currently available in the Canadian market namely Gardasil® and Cervarix®. Gardasil, (approved in Canada July 2006) is Merck's quadrivalent HPV recombinant vaccine against HPV types 6, 11, 16 and 18. Gardasil® is approved for both men and women aged 9 to 26 years of age [2]. On the other hand, Cervarix (approved in Canada February 2010) is GlaxoSmithKline bivalent HPV recombinant vaccine against HPV types 16 and 18. Cervarix® is approved for women aged 10 to 25 years of age and has showed a safety profile in women aged 15 to 55 years of age. Each of the above vaccines is given in 3 doses over a six-month span (0, 2 and 6 months). In a randomised, double-blind, controlled PApilloma TRIal against Cancer In young Adults (PATRICIA), the quadrivalent vaccine showed high efficacy against cervical cancers associated with HPV-16/18 [4]. Furthermore, the quadrivalent vaccine demonstrated cross protection against other HPV types not included in the vaccine [4] and showed a sustained efficacy of up to 5 years [3]. Similarly, the bivalent vaccine had a sustained efficacy of up to 4.5 years in women who received all three doses of the vaccine and demonstrated a good long-term safety profile [1]. Harper et al also reported the evidence of cross protection against incident infection with HPV 45 and HPV 31 established by the bivalent vaccine [1]. Despite, the long term safety profiles of both vaccines, they do not protect against all HPV types, nor against disease if a woman has previously been exposed through sexual activity [5]. This in turn warrants the utilization of regular screening methods such as the Pap cytology even after vaccination.

In conclusion, the availability of quadrivalent and bivalent prophylactic HPV vaccines represents the best hope for preventing most cases of cervical cancer and HPV-associated diseases [8]. However, the reduction in the economic burden caused by HPV screening is yet to be determined.

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***Corresponding author:** Marlene Shehata R.Ph., BSc. Pharm., MSc. Med., PC., PhD, Clinical Pharmacist Consultant/Cardiovascular Geneticist, Ottawa ON, Canada, Tel: 519-702-5476, Fax: 347-710-5334; E-mail: marlenefouad@yahoo.com

Received June 22, 2011; **Accepted** June 22, 2011; **Published** July 22, 2011

Citation: Shehata MF, Pater A (2011) Human Papillomavirus (HPV) Vaccine: Is it worthwhile?. J Biotechnol Biomaterial 1:103e. doi:10.4172/2155-952X.1000103e