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Supplemental Material to:

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Social media microblogs as an HPV vaccination forum

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Supplement:

HPV Vaccines Efficiency, Safety & Uptake

The first cancer vaccine (quadrivalent HPV recombinant) was approved by the Food and Drug Administration (FDA) in 2006.[1,2,4] Currently there are two licensed HPV vaccines: Gardasil (Merck & Co., Whitehouse Station, NJ, USA) and Cervarix (GlaxoSmithKline, USA). Gardasil can protect 11 through 26 year-old females and 9 through 26 year-old males against multiple HPV types and genital warts while Cervarix targets type 16 and 18, recommended for females 10 through 25 years of age.[2] Although HPV is usually sexually transmitted,[1] some research shows that girls can also get infected even without sexual intercourse, thus, vaccination is recommended at a young age.[10]

Both vaccines are three-dose, intramuscular injection vaccines requiring 3 doses. Quadrivalent vaccine efficacy was established in two studies.[4] The Females United to Unilaterally Reduce Endo ⁄ Ectocervical Disease (FUTURE I) study assessed the incidence of genital warts, vulvar or cervical intraepithelial neoplasia (CIN) or cancer in a randomized, double-blind, placebo-controlled, international trial. High effectiveness in pre-cancerous prevention was shown in a study

of women aged 16-24 years old.[4] Another clinical trial of quadrivalent HPV vaccine confirmed high efficacy in preventing lower genital tract disease in women up to age 45 years.[5] Bivalent vaccine efficacy prevention against CIN (grade 2-3) was 90% in the mean follow-up period of 14.9 months in a phase III study among 18644 women of the right age and the vaccine efficacy.[3]

Although the vaccine is one of the most effective tools in disease prevention, it's not perfectly safe and effective.[6,7] "As with all US-administered vaccines, HPV vaccines were safety-tested before licensing and are continually monitored for safety and effectiveness." [2] It is necessary to monitor vaccine safety in order to detect rare reactions, to follow higher risk groups (i.e. the elderly and pregnant women etc.) and to maintain public confidence in vaccine.[8] The FDA monitors safety via three integrated elements: the Vaccine Adverse Event Reporting System (VAERS), the Vaccine Safety Datalink (VSD) Project, and the Clinical Immunization Safety Assessment (CISA) network.[4,9] Up to December 31st, 2008, 11,916 VAERS adverse events had been reported from more than 23 million doses of HPV vaccine distributed in the United States.[4] The majority (94%) of the

documented reports are not serious and there is no link between the vaccine and serious adverse events claims, according to CDC evaluation of VAERS data.[4]

Note:

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3. Luciani S, Prieto-Lara E, Vicari A. Providing vaccines against human papillomavirus to adolescent girls in the americas: Battling cervical cancer, improving overall health. Health Affair. 2011 June 01;30(6):1089-95.

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6. Omer SB, Salmon DA, Orenstein WA, deHart MP, Halsey N. Vaccine refusal, mandatory immunization, and the risks of vaccine-preventable diseases. N Engl J Med. 2009 05/07; 2012/08;360(19):1981-8.

7. Chen, Robert T, MD, MA', 'Hibbs, Beth. Pediatric Annals. Vaccine safety: Current and future challenges. Pediatric Annals. 1998;27(7):445-55.

8. Why it's important to monitor vaccine safety [homepage on the Internet]. Available from: http://www.cdc.gov/vaccinesafety/Vaccine_Monitoring/Index.html.

9. Vaccine safety [homepage on the Internet]. 2012 June 19, 2012. Available from: http://www.cdc.gov/vaccinesafety/Vaccines/HPV/hpv_faqs.html

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10. Widdice LE, Brown DR, Bernstein DI, et al. PRevalence of human papillomavirus infection in young women receiving the first quadrivalent vaccine dose. Arch Pediat Adol Med August 1. 2012;166(8):774-6.