

# CYTOTOLOGY AND DNA HPV-TESTING IN THE ERA OF HPV-VACCINE

Marek Spaczyński

Poznań University of Medical Sciences, Poznań, Poland

Address for correspondence: M. Spaczyński, Poznań University of Medical Sciences, Gynecology, Obstetrics and Gynecological Oncology, Polna 33, 60-535 Poznań, Poland. E-mail: m.spaczynski@op.pl

## Summary

Human papillomavirus (HPV) persistent infection is the main factor leading to the cervical cancer carcinogenesis. Wide-spread public vaccination against HPV as primary prevention is expected to reduce cervical cancer incidence and mortality rates. It is essential to bear in mind that screening for precancerous lesions cannot be discontinued because vaccination will not protect against HPV types not included in the first and second generation vaccines.

**Key words:** cytology, HPV-testing, papillomavirus vaccines – therapeutic use, papillomavirus infections – prevention and control, papillomavirus infections – diagnosis, uterine cervical neoplasms

## REFERENCES

1. Arbyn M, Dillner J. Review of current knowledge on HPV vaccination: an appendix to the European Guidelines for Quality Assurance in Cervical Cancer Screening. *J Clin Virol.* 2007 Mar;38(3):189-97.
2. Oncology Center [homepage on the Internet]. Warsaw: National Cancer Registry Centrum Onkologii Marii Skłodowskiej-Curie [cited 2008 Mar 11]. Available from: <http://epid.coi.waw.pl/krn>. (In Polish.)
3. IARC Monograph Working Group. Human Papillomaviruses. IARC Monographs of the evaluation to carcinogenic risks to humans. Volume 90. Lyon: IARC, 2005
4. Muñoz N, Castellsagué X, de González AB, Gissmann L. Chapter 1: HPV in the etiology of human cancer. *Vaccine.* 2006 Aug 21;24S3:S1-10.
5. Muñoz N, Bosch FX, Castellsagué X, Diaz M, de Sanjose S, Hammouda D, et al. Against which human papillomavirus types shall we vaccinate and screen? The international perspective. *Int J Cancer.* 2004 Aug 20;111(2):278-85.
6. De Sanjosé S, Diaz M, Castellsagué X, Clifford G, Bruni L, Muñoz N, et al. Worldwide prevalence and genotype distribution of cervical human papillomavirus DNA in women with normal cytology: a meta-analysis. *Lancet Infect Dis.* 2007 Jul;7(7):453-9.
7. Spaczyński M, Nowak-Markwitz E, Kędzia W. Cervical cancer screening in Poland and worldwide. *Ginekol Pol.* 2007;78:354-60. (In Polish.)
8. Parkin DM. The global health burden of infection-associated cancers in the year 2000. *Int J Cancer.* 2006 Jun 15;118(12):3030-44.
9. Clifford GM, Smith JS, Aguado T, Franceschi S. Comparison of HPV type distribution in high-grade cervical lesions and cervical cancer: a meta-analysis. *Br J Cancer.* 2003 Jul 7;89(1):101-5.
10. Clifford GM, Smith JS, Plummer M, Muñoz N, Franceschi S. Human papillomavirus types in invasive cervical cancer worldwide: a meta-analysis. *Br J Cancer.* 2003 Jan 13;88(1):63-73.
11. Harper DM, Franco EL, Wheeler CM, Moscicki AB, Romanowski B, Roteli-Martins CM, et al. Sustained efficacy up to 4.5 years of a bivalent L1 virus-like particle vaccine against human papillomavirus types 16 and 18: follow-up from a randomised control trial. *Lancet.* 2006 Apr 15;367(9518):1247-55.
12. Benard VB, Ehemann CR, Lawson HW, Blackman DK, Anderson C, Helsel W, et al. Cervical screening in the National Breast and Cervical Cancer Early Detection Program, 1995-2001. *Obstet Gynecol.* 2004 Mar;103(3):564-71.
13. Castle PE, Solomon D, Schiffman M, Wheeler CM. Human papillomavirus type 16 infections and 2-year absolute risk of cervical precancer in women with equivocal or mild cytologic abnormalities. *J Natl Cancer Inst.* 2005 Jul 20;97(14):1066-71.
14. Clifford GM, Rana RK, Franceschi S, Smith JS, Gough G, Pimenta JM. Human papillomavirus genotype distribution in low-grade cervical lesions: comparison by geographic region and with cervical cancer. *Cancer Epidemiol Biomarkers Prev.* 2005 May;14(5):1157-64.
15. Clifford G, Franceschi S, Diaz M, Muñoz N, Villa LL. Chapter 3: HPV type-distribution in women with and without cervical neoplastic diseases. *Vaccine.* 2006 Aug 21;24 Suppl 3:S26-34.
16. Franco EL, Cuzick J, Hildesheim A, de Sanjosé S. Chapter 20: Issues in planning cervical cancer screening in the era of HPV vaccination. *Vaccine.* 2006 Aug 21;24 Suppl 3:S171-7.
17. Prinsen CF, Fles R, Wijnen-Dubbers CW, de Valk HA, Klaassen CH, Mravunac M, et al. Baseline human papillomavirus status of women with abnormal smears in cervical screening: a 5-year follow-up study in the Netherlands. *BJOG.* 2007 Aug;114(8):951-7.
18. Spaczyński M, Nowak-Markwitz E, Basta A. Polish gynecology society guidelines for human papillomavirus (HPV) vaccine use to prevent cervical cancer. *Ginekol Pol.* 2007;78:185-90. (In Polish.)

- 
19. Goldie SJ, Kohli M, Grima D, Weinstein MC, Wright TC, Bosch FX, et al. Projected clinical benefits and cost-effectiveness of a human papillomavirus 16/18 vaccine. *J Natl Cancer Inst.* 2004 Apr 21;96(8):604-15.
  20. U.S. Food and Drug Administration [homepage on the Internet]. Vaccines and Related Biological Products Advisory Committee (VRBPAC). GARDASIL. Human papillomavirus [types 6,11,16 and 18] recombinant vaccine [cited 2008 Mar 11]. Available from: [www.fda.gov](http://www.fda.gov).
  21. Centers for Disease Control and Prevention [homepage on the Internet]. Atlanta: Department of Health and Human Services. Advisory Committee on Immunization Practices (ACIP). Resolution No. 6/06-2 [cited 2008 Mar 11]. Available from: <http://www.cdc.gov>.
  22. Franco EL, Bosch FX, Cuzick J, Schiller JT, Garnett GP, Meheus A, et al. Chapter 29: Knowledge gaps and priorities for research on prevention of HPV infection and cervical cancer. *Vaccine.* 2006 Aug 21;24 Suppl 3: S242-9.
  23. Wright TC, Bosch FX, Franco EL, Cuzick J, Schiller JT, Garnett GP, et al. Chapter 30: HPV vaccines and screening in the prevention of cervical cancer; conclusions from a 2006 workshop of international experts. *Vaccine.* 2006 Aug 21;24 Suppl 3:S251-61.
  24. Bosch F. The burden of HPV and HPV diseases: the European perspective. In: HPV Master Class Meeting; 2007 Jan 30-31; Madrid, Spain. Madrid: GSK; 2007.