



HPV

HPV Genotyping

GA Test Code	7575
Method	PCR and DNA Sequencing
Specimens	ThinPrep: 8.0 mL (4.0 mL), store and ship ambient (up to 3 months). SurePath: 2.0 mL (1.0 mL), store and ship ambient (28 days). hc2 DNA Collection Device: Cervical brush can be stored and shipped in STM up to 2 weeks ambient, and an additional week if refrigerated. After that, specimens can be frozen up to 3 months prior to testing. Note: <i>Cervical specimens must be collected prior to the application of acetic acid or iodine if colposcopic examination is being performed.</i> Biopsy: fresh tissue (preferred) , 3 mm ³ , refrigerated (7 days) or frozen; for formalin-fixed, paraffin-embedded blocks, six 3-micron sections <i>preferred</i> , ambient; for needle biopsy , 2.0 mL (1.0 mL), refrigerated or frozen.
Causes for Rejection	Quantity not sufficient (QNS) for analysis; time and/or temperature instructions not followed; cervical sample collected after application of acetic acid or iodine.
Reference Range	Not Detected
Turnaround Time	5-10 days
CPT Code	87621

Description

This assay uses multiplex PCR to amplify the L1 gene of most known HPV types. The amplified DNA is subjected to dideoxy sequencing followed by capillary electrophoresis to determine the HPV type present. The human *beta-globin* gene is amplified from tissue samples (fresh and paraffin-embedded) to ensure that DNA extracted from the sample is of sufficient quantity and quality.

Clinical Utility

Of the 13 or 14 recognized high-risk types of HPV, types 16 and 18 are highly prevalent and more oncogenic than other high-risk types. Specifically, high-risk types 16 and 18 have been reported to cause 70% of cervical cancers and 90% of the head and neck cancers caused by HPV. Studies have shown that women with HPV type 16 cervical infections are at greater risk of developing CIN3+ compared to other high-risk types. Women with normal cytology that are HPV type 18 positive not only have an increased risk of CIN3+, but also adenocarcinoma. Regarding head and neck cancers, nearly 50% of all oropharyngeal cancers and up to 15% of oral cancers are attributable to HPV.

The clinical utility of HPV genotyping assays was discussed at the 2006 ASCCP Consensus Conference. Based on the data available in 2006, it was determined that in cytology negative women 30 years and older who are HPV DNA positive (for any of the 13 or 14 high-risk types of HPV detected by the high-risk HPV assays) molecular genotyping assays that detect HPV 16 and 18 would be clinically useful for determining which women should be referred for immediate colposcopy (positive for types 16 or 18), and which could be followed-up with repeat cytology and high-risk HPV testing in 12 months (negative for types 16 and 18).

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Khan MJ, Castle PE, Loricz AT, et al. The elevated 10-year risk of cervical precancer and cancer in women with human papillomavirus (HPV) type 16 or 18 and the possible utility of type-specific HPV testing in clinical practice. *J Nat'l Cancer Inst* 2005; 20(97): 1072-9.

Bulk S, Berkhof J, Bulkman NW, et al. Preferential risk of HPV16 for squamous cell carcinoma and of HPV18 for adenocarcinoma of the cervix compared to women with normal cytology in the Netherlands. *Br J Cancer* 2006; 94:171-5.

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Meijer CJ, Snijders PJ, Castle PE. Clinical utility of HPV genotyping. *Gynec Onc* 2006; 103:12-17.

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