



Topic: Human Papillomavirus (HPV) Testing in Head and Neck Carcinomas

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Why is this guideline needed?

Over the past few decades, our understanding of HPV's role in certain head and neck cancers, particularly those in the oropharynx, has increased. Patients with high-risk (HR) HPV-positive oropharyngeal squamous cell carcinoma (OPSCC) have a better prognosis and may be candidates for less aggressive treatment. Consequently, accurate assessment of tumor HPV status is critical.

Which high-risk HPV genotypes should laboratories test?

HPV 16 is the most common HR-HPV type associated with OPSCC, but a small percentage of OPSCC cases can be associated with other HR-HPV types including 18, 31, 33, etc., with as many as 18 different types which should be covered in any HPV-specific test that is utilized.

What is the most important recommendation of the guideline?

Recommendation 1 – Pathologists should perform HR-HPV testing on all patients with newly diagnosed OPSCC, including all squamous cell carcinoma histologic subtypes. This testing may be performed on the primary tumor or on a regional lymph node metastasis when the clinical findings are consistent with an oropharyngeal primary.

More than 100 studies identified in the systematic review of the literature informed this recommendation.

There are many ways to determine HR-HPV tumor status. Why did the panel specifically recommend p16 immunohistochemistry (IHC)?

Because of the abundant literature on p16 IHC as an independent predictor of improved patient prognosis and based on its widespread availability, ease of use, reproducibility of interpretation, low cost, and excellent performance on small specimen samples, the expert panel concluded that pathologists should perform HR-HPV testing by surrogate marker p16 IHC on oropharyngeal tissue specimens (ie, non-cytology). Additional HPV-specific testing may be done at the discretion of the pathologist, treating clinician, or in the context of a clinical trial. Further, there are scenario-specific recommendations from the expert panel for the use of HPV-specific testing in neck lymph node and distant metastasis tumor specimens.

Our laboratory doesn't use p16 IHC. Will we be penalized during a laboratory inspection?

Since the American Joint Committee on Cancer (AJCC)/CAP staging of oropharyngeal squamous cell carcinomas is dependent on p16/HPV status, if p16 is not performed, some form of HR-HPV testing must be utilized.

As with any clinical, evidence-based guideline, however, specifically following the recommendations is not mandatory. Recommendations may be incorporated into future versions of the CAP Laboratory Accreditation Programs (LAP) checklists; however, they are not currently required by LAP or any regulatory or accrediting agency. It is only highly encouraged that laboratories adopt these recommendations. The hope is that over time, laboratories and clinicians will follow the guideline recommendations.

Should pathologists perform HR-HPV testing on non-OPSCCs? What about non-squamous cell carcinomas of the oropharynx?

Pathologists should not routinely perform HR-HPV testing on either non-OPSCCs or non-squamous carcinomas of the oropharynx. Routine HR-HPV testing in non-OPSCCs is not indicated because there is insufficient evidence to support prognostic or therapeutic differences based on the presence or absence of HR-HPV. Additionally, there was insufficient evidence to support HR-HPV testing on non-squamous carcinomas of the oropharynx. While HR-HPV testing can be performed on a select, case-by-case basis, routine testing is not recommended.

Why shouldn't pathologists provide a tumor grade or differentiation for HPV-positive/p16-positive OPSCC?

HPV-positive OPSCCs have a non-keratinizing histologic appearance that might be interpreted as poorly differentiated. However, HPV-positive OPSCCs do not behave like poorly differentiated



squamous cell carcinomas. Paradoxically, despite looking “bad”, these are tumors for which patients do better clinically with better response to treatment. Further, grading/differentiation within HPV-positive OPSCCs as a distinct group has not been specifically developed, much less validated as prognostic. For this reason, the panel does not recommend that a tumor grade or differentiation be provided.

REFERENCES

1. Lewis JS Jr, Beadle B, Bishop JA, et al. Human papillomavirus testing in head and neck carcinomas: guideline from the College of American Pathologists [published online December 18, 2017]. *Arch Pathol Lab Med*. doi: [10.5858/arpa.2017-0286-CP](https://doi.org/10.5858/arpa.2017-0286-CP)