CMS Measure ID/CMS QCDR ID: CAP 36

Measure Title: p16 Immunohistochemistry Reporting for Human Papillomavirus in Patients with Oropharyngeal Squamous Cell Carcinoma (OPSCC)

Measure Specifications

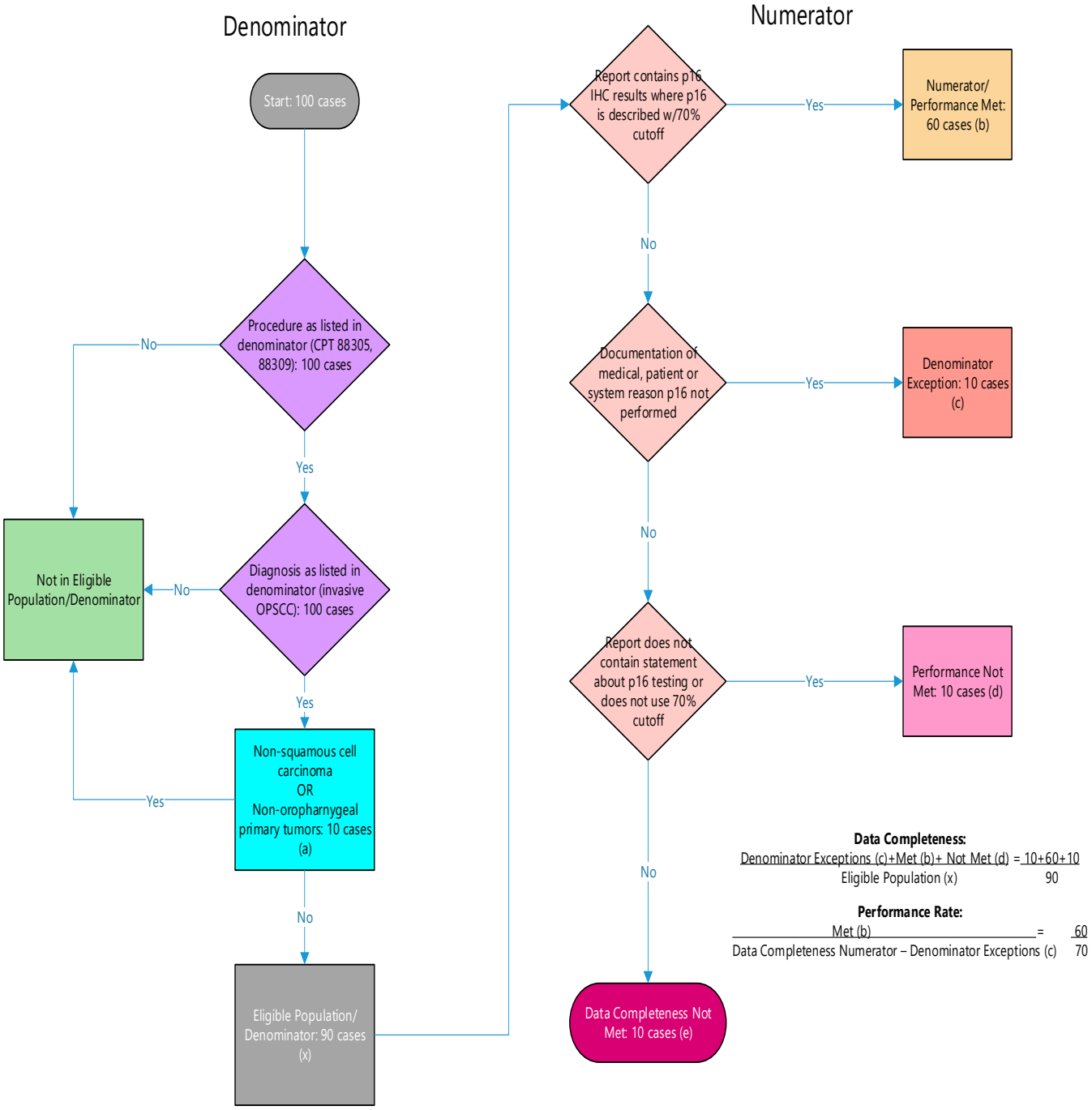
Measure Description	Percentage of surgical pathology reports for invasive oropharyngeal squamous cell carcinoma (OPSCC) with quantitative p16 immunohistochemistry (IHC) using a ≥70% nuclear and cytoplasmic staining cutoff performed as a surrogate for HR-HPV status
Denominator Statement	All surgical pathology reports with a diagnosis of invasive OPSCC, biopsy or resection. CPT®: 88305, 88309 **AND** ICD10: • C01: Malignant neoplasm of base of tongue • C05.1: Malignant neoplasm of soft palate • C09.0: Malignant neoplasm of tonsillar fossa • C09.1: Malignant neoplasm of tonsillar pillar (anterior) (posterior) • C09.8: Malignant neoplasm of overlapping sites of tonsil • C09.9: Malignant neoplasm of tonsil, unspecified • C10.0: Malignant neoplasm of vallecula • C10.1: Malignant neoplasm of anterior surface of epiglottis • C10.2: Malignant neoplasm of lateral wall of oropharynx • C10.3: Malignant neoplasm of posterior wall of oropharynx • C10.4: Malignant neoplasm of branchial cleft • C10.8: Malignant neoplasm of overlapping sites of oropharynx • C10.9: Malignant neoplasm of oropharynx, unspecified • C14.0: Malignant neoplasm of pharynx, unspecified • C14.2: Malignant neoplasm of Waldeyer's ring • C77.0: Secondary and unspecified malignant neoplasm of lymph nodes of head, face and neck
Denominator Exclusions	Non-squamous cell carcinoma of the oropharynx (i.e. adenocarcinoma of the oropharynx) Non-oropharyngeal primary tumors of the head and neck (e.g. lip, gum, sinus, anterior tongue)
Denominator Exceptions	Insufficient tissue for analysis Necrotic tissue No residual carcinoma p16 cannot be determined p16 testing not indicated
Numerator Statement	Pathology reports containing documentation of p16 IHC performed (currently or previously) as a surrogate marker for presence of HR-HPV AND where

	p16 status is described using the ≥70% nuclear and cytoplasmic staining cutoff* *p16 quantitation: p16 IHC is considered positive and a surrogate for the presence of HR-HPV when the tumor shows ≥70% nuclear and cytoplasmic immunoreactivity with moderate to strong intensity.
Numerator Exclusions	None
Guidance	Denominator Guidance Includes invasive OPSCC reports for specimens from primary tumors (tonsils, soft palate, or base of tongue (posterior to circumvallate papillae) and lateral and posterior pharyngeal walls) OR metastatic squamous cell carcinoma of unknown primary in a cervical upper or mid jugular chain lymph node. Secondary malignant neoplasms elsewhere in the body are not considered. Numerator Guidance Quantitative p16 IHC results may include: • p16 IHC positive (≥70% nuclear and cytoplasmic moderate to strong staining) • p16 IHC negative (< 70% nuclear and cytoplasmic moderate to strong staining) • p16 previously performed (includes recurrent tumors where testing was performed on the primary tumor) • p16 cannot be determined The pathology report must include an interpretation statement (as noted above) by the reporting pathologist; a link to a report from a reference lab or statement about ordering testing is not sufficient. The report must include a statement about the cutoff value used to determine positive or negative status.
Measure Information	
NQS Domain	Communication and Care Coordination
Meaningful Measures Area(s)	Transfer of Health Information and Interoperability
Meaningful Measure Rationale	Human papillomavirus (HPV) is a major cause of oropharyngeal squamous cell carcinoma (OPSCC) and has contributed to its increased incidence (1). HPV-positive OPSCC differs from HPV-negative OPSCC related to other risk factors including alcohol and tobacco use and has an improved response to treatment and better prognosis (2). Therefore, it is crucial to determine the HPV status of squamous cell carcinomas of the oropharynx, as treating clinicians utilize this information when developing a treatment plan for patients, which may include less aggressive treatment modalities. In the clinical setting, p16 IHC is an approach used to reliably diagnose HPV-induced OPSCC.

	The p16 test is considered to best stratify patient survival outcomes while also being practical and inexpensive (3). Furthermore, data suggest that the correlation between HPV positivity and p16 overexpression is highest when the ≥70% staining for p16 overexpression is applied (4). 1. Chaturvedi AK, Engels EA, Pfeiffer RM, et al. Human papillomavirus and rising oropharyngeal cancer incidence in the United States. J Clin Oncol. 2011;29(32):4294–4301. 2. Wang MB, Liu IY, Gornbein JA, Nguyen CT. HPV-positive oropharyngeal carcinoma: a systematic review of treatment and prognosis. Otolaryngol Head Neck Surg. 2015. Nov;153(5):758-69. 3. Lewis JS Jr, Beadle B, Bishop JA, Chemock RD, Colasacco C, Lacchetti C, et al. Human papillomavirus testing in head and neck carcinomas: guideline from the College of American Pathologists. Arch Pathol Lab Med. 2018;142:559–597. 4. Grønhøj Larsen C, Gyldenløve M, Jensen DH, Therkildsen MH, Kiss K, Norrild B, Konge L, von Buchwald C. Correlation between human papillomavirus and p16 overexpression in oropharyngeal tumours: a systematic review. Br J Cancer. 2014. Mar 18;110(6):1587-94.
Measure Type	Process
Data Source	Laboratory Information Systems; pathology reports
Summary of Performance Gap Evidence	For January-December 2020, 3 reporting entities submitted data on CAP 36, but one was below the 20-case minimum. The performance rates of the remaining practices were 100%. For January-1 November 2021, two practices have entered data on CAP 36 but both are significantly below the 20-case minimum. A study published after the relevant guideline came out assessed compliance and determined that “Pathologists continue to deviate from the testing guideline significantly in everyday practice. Further education and discussion about the appropriate handling of head and neck cancer specimens may be needed” (1) Specifically, “(h)uman papillomavirus testing deviated from the guideline in 45 of 107 cases (42.1%) before and 93 of 258 cases (36.0%) after their publication” (1). Of the deviant cases that were oropharyngeal squamous cell carcinoma, 100% of the deviations after the guideline were due to not performing p16 IHC (unnecessary testing, i.e. p16 on non-oropharyngeal was also included in the deviant case list). Therefore gaps in performance persist. 1. Donna C Ferguson, Mitra Mehrad, Kim A Ely, Justin R Shinn, James S. Lewis; Human Papillomavirus Testing in Head and Neck Squamous Cell Carcinoma: Impact of the 2018 College of American Pathologists Guideline Among Referral Cases at a Large Academic Institution. Arch Pathol Lab Med 2020; doi: https://doi.org/10.5858/arpa.2020-0220-OA

Measure Owner	College of American Pathologists
NQF ID	N/A
Number of Performance Rates	1
Overall Performance Rate	1st Performance Rate
High-priority	Yes
Improvement Notation	Inverse Measure: No **Proportional Measure: Yes (Higher score indicates better quality)** Continuous Variable Measure: No Ratio Measure: No Risk-adjusted: No
Care Setting andSpecialty	Care Setting: Other—Laboratories; Telehealth not applicable Specialty: Pathology
Current Clinical Guideline the Measure is Derived From	Pathologists should perform high-risk human papillomavirus (HR-HPV) testing on all patients with newly diagnosed oropharyngeal squamous cell carcinoma (OPSCC),. 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 (Strong Recommendation) (1). For oropharyngeal tissue specimens (i.e., noncytology), pathologists should perform HR HPV testing by surrogate marker p16 immunohistochemistry (IHC). Additional HPV-specific testing may be done at the discretion of the pathologist and/or treating clinician, or in the context of a clinical trial (Recommendation) (1). Pathologists should report p16 IHC positivity as a surrogate for HR-HPV in tissue specimens (i.e., noncytology) when there is at least 70% nuclear and cytoplasmic expression with at least moderate to strong intensity (Expert Consensus Opinion) (1). Tumor human papillomavirus (HPV) testing by p16 immunohistochemistry (IHC) required as part of the workup for cancer of the oropharynx (Category 2A) (2). 1. Lewis JS Jr, Beadle B, Bishop JA, Chemock RD, Colasacco C, Lacchetti C, et al. Human papillomavirus testing in head and neck carcinomas: guideline from the College of American Pathologists. Arch Pathol Lab Med. 2018;142:559–597. 2. Pfister DG, Spencer S, Adelstein D, Adkins D, Brizel DM, Burtness B, et al. NCCN clinical practice guidelines in oncology: head and neck cancers, version 2.2018. National Comprehensive Cancer Network. Available at https://www.nccn.org/professionals/physician_gls/recently_updated.aspx

Measure Flow



Data Completeness:

$$\frac{\text{Denominator Exceptions (c)+Met (b)+ Not Met (d)}}{\text{Eligible Population (x)}} = \frac{10+60+10}{90}$$

Performance Rate:

$$\frac{\text{Met (b)}}{\text{Data Completeness Numerator} - \text{Denominator Exceptions (c)}} = \frac{60}{70}$$