| **Core/**  **Non-core** | **Element name** | **Values** | **Commentary** | **Implementation notes** |
| --- | --- | --- | --- | --- |
| Core and  Non-core | NEOADJUVANT THERAPY | Single selection value list:  • Information not provided  • Not administered  • Administered, specify type  Non-core: Multi selection value list  (select all that apply):   * Chemotherapy * Radiotherapy * Targeted therapy, specify if available * Immunotherapy, specify if available | Patients affected by locally advanced sinonasal carcinomas may be treated with pre-operative chemo-radiation protocols that could result in a significant improvement in survival in selected cases.1-4  In this case, specimens should be extensively sampled and changes presumably induced by treatment should be reported as free text. Quantification of the extent of response is currently considered not relevant for clinical purposes. Type of (chemo) therapy, number of cycles, interval between last cycle of chemotherapy and local regional treatment initiation can be annotated if available.  **References**  1 Nibu K, Sugasawa M, Asai M, Ichimura K, Mochiki M, Terahara A, Kawahara N and Asato H (2002). Results of multimodality therapy for squamous cell carcinoma of maxillary sinus. *Cancer* 94(5):1476-1482.  2 Samant S, Robbins KT, Vang M, Wan J and Robertson J (2004). Intra-arterial cisplatin and concomitant radiation therapy followed by surgery for advanced paranasal sinus cancer. *Arch Otolaryngol Head Neck Surg* 130(8):948-955.  3 Madison Michael L, 2nd, Sorenson JM, Samant S and Robertson JH (2005). The treatment of advanced sinonasal malignancies with pre-operative intra-arterial cisplatin and concurrent radiation*. J Neurooncol* 72(1):67-75.  4 Licitra L, Suardi S, Bossi P, Locati LD, Mariani L, Quattrone P, Lo Vullo S, Oggionni M, Olmi P, Cantu G, Pierotti MA and Pilotti S (2004). Prediction of TP53 status for primary cisplatin, fluorouracil, and leucovorin chemotherapy in ethmoid sinus intestinal-type adenocarcinoma*. J Clin Oncol* 22(24):4901-4906. |  |
| Core | OPERATIVE PROCEDURE | Multi selection value list (select all that apply):  • Not specified  OR  • Biopsy, specify  • Resection, specify   * Endoscopic nasal procedure, specify * Partial maxillectomy * Radical maxillectomy * Orbito-maxillary resection * Craniofacial resection * Open * Endoscopic * Other, specify   • Neck (lymph node) dissection\*, specify  • Other, specify | Different options are currently available for the surgical treatment of sinonasal malignancies, which can be chosen according to histopathology, extent of the lesion, and experience of the surgeon. Surgical approaches include craniofacial resections, endoscopic endonasal resections, and combined approaches.1-3 This results in a wide range of surgical specimens submitted for histopathological analysis.  **References**  1 Meccariello G, Deganello A, Choussy O, Gallo O, Vitali D, De Raucourt D and Georgalas C (2016). Endoscopic nasal versus open approach for the management of sinonasal adenocarcinoma: A pooled-analysis of 1826 patients. *Head Neck* 38 Suppl 1:E2267-2274.  2 Roxbury CR, Ishii M, Richmon JD, Blitz AM, Reh DD and Gallia GL (2016). Endonasal Endoscopic Surgery in the Management of Sinonasal and Anterior Skull Base Malignancies. *Head Neck Pathol* 10(1):13-22.  3 Llorente JL, Lopez F, Suarez C and Hermsen MA (2014). Sinonasal carcinoma: clinical, pathological, genetic and therapeutic advances. *Nat Rev Clin Oncol* 11(8):460-472. | \*If a neck dissection is submitted, then a separate dataset is used to record the information. |
| Core | SPECIMENS SUBMITTED | Multi selection value list (select all that apply):  • Not specified  OR  • Nasal cavity   * Septum * Floor * Lateral wall * Vestibule   • Paranasal sinus(es), maxillary  • Paranasal sinus(es), ethmoid  • Paranasal sinus(es), frontal  • Paranasal sinus(es), sphenoid  • Other, specify | According to the surgical approach, different types of specimen can be submitted for histological analysis. Specimens from surgery often consist of fragmented material that should be properly labelled at the time of surgery including a description of the anatomic site and type of tissue submitted (tumour or other). Due to the difficulty in the orientation of the samples (impossible in some cases) it is recommended that margins be submitted separately, properly identified and labelled (especially in suspicious areas). Surgical resection specimens consist most often of the maxillary bone and adjacent anatomic structures removed according to the extent of the tumour.1  For additional independent tumours use separate datasets. A single bilateral tumour can be reported as “midline”.  **References**  1 Slootweg PJ (2005). Complex head and neck specimens and neck dissections. How to handle them. *J Clin Pathol* 58(3):243-248. | . |
| Core | TUMOUR SITE | Multi selection value list (select all that apply):  • Cannot be assessed  OR  • Nasal cavity   * Septum   o Left  o Right  o Midline  o Laterality not specified   * Floor   o Left  o Right  o Laterality not specified   * Lateral wall   o Left  o Right  o Laterality not specified   * Vestibule   o Left  o Right  o Laterality not specified  • Paranasal sinus(es), maxillary   * Left * Right * Laterality not specified   • Paranasal sinus(es), ethmoid   * Left * Right * Laterality not specified   • Paranasal sinus(es), frontal   * Left * Right * Laterality not specified   • Paranasal sinus(es), sphenoid   * Left * Right * Laterality not specified   • Cribriform plate   * Left * Right * Laterality not specified   • Other, specify including laterality | The sinonasal tract consists of the nasal cavity and the paranasal sinuses (maxillary, ethmoid, frontal, and sphenoid). The nasal cavity can be further subdivided into the nasal septum, floor, lateral wall, and vestibule. Among sinonasal tract carcinomas, the most common site of tumour origin is the maxillary sinus, followed by the nasal cavity and ethmoid sinus. It is rare for carcinomas to arise from the frontal or sphenoid sinuses.1-5  The precise tumour site within the sinonasal tract is important to record. First, different staging schemes are utilized for maxillary sinus carcinomas and those arising in the ethmoid sinus or nasal cavity.6 Second, there is prognostic importance to the tumour location. For example, carcinomas primary to the nasal cavity have been shown to have an improved prognosis over carcinomas primary to the paranasal sinuses, likely because nasal carcinomas give rise to symptoms (e.g. nasal obstruction or epistaxis) and this come to clinical attention sooner.1,5,7,8 In addition, among maxillary sinus carcinomas, those arising from the anterior-inferior portion have a better prognosis than those arising from the superior-posterior portion, likely because the latter group has easier access to structures such as the orbit or skull base.6 Finally, certain carcinomas are closely associated with specific sinonasal sub-sites. For example, intestinal-type adenocarcinomas and neuroendocrine carcinomas occur most often in the ethmoid sinuses, while squamous cell carcinoma occurs most often in the maxillary sinus.9-12  It is recognized that some carcinomas, particularly highly aggressive types like sinonasal undifferentiated carcinoma or NUT carcinoma, usually affect more than one sinonasal anatomic sub-site. In this case, every affected site should be selected.  **References**  1 Ansa B, Goodman M, Ward K, Kono SA, Owonikoko TK, Higgins K, Beitler JJ, Grist W, Wadsworth T, El-Deiry M, Chen AY, Khuri FR, Shin DM and Saba NF (2013). Paranasal sinus squamous cell carcinoma incidence and survival based on Surveillance, Epidemiology, and End Results data, 1973 to 2009. *Cancer* 119(14):2602-2610.  2 Robin PE, Powell DJ and Stansbie JM (1979). Carcinoma of the nasal cavity and paranasal sinuses: incidence and presentation of different histological types. *Clin Otolaryngol Allied Sci* 4(6):431-456.  3 Sanghvi S, Khan MN, Patel NR, Yeldandi S, Baredes S and Eloy JA (2014). Epidemiology of sinonasal squamous cell carcinoma: a comprehensive analysis of 4994 patients. *Laryngoscope* 124(1):76-83.  4 Takahashi Y, Bell D, Agarwal G, Roberts D, Xie TX, El-Naggar A, Myers JN and Hanna EY (2014). Comprehensive assessment of prognostic markers for sinonasal squamous cell carcinoma. *Head Neck* 36(8):1094-1102.  5 Turner JH and Reh DD (2012). Incidence and survival in patients with sinonasal cancer: a historical analysis of population-based data. *Head Neck* 34(6):877-885.  6 Amin MB, Edge S, Greene FL, Byrd DR, Brookland RK, Washington MK, Gershenwald JE, Compton CC, Hess KR, Sullivan DC, Jessup JM, Brierley JD, Gaspar LE, Schilsky RL, Balch CM, Winchester DP, Asare EA, Madera M, Gress DM, Meyer LR (eds) (2017). *AJCC Cancer Staging Manual 8th ed.* Springer, New York.  7 Dulguerov P, Jacobsen MS, Allal AS, Lehmann W and Calcaterra T (2001). Nasal and paranasal sinus carcinoma: are we making progress? A series of 220 patients and a systematic review. *Cancer* 92(12):3012-3029.  8 Thorup C, Sebbesen L, Dano H, Leetmaa M, Andersen M, Buchwald C, Kristensen CA, Bentzen J, Godballe C, Johansen J and Grau C (2010). Carcinoma of the nasal cavity and paranasal sinuses in Denmark 1995-2004. *Acta Oncol* 49(3):389-394.  9 Klintenberg C, Olofsson J, Hellquist H and Sokjer H (1984). Adenocarcinoma of the ethmoid sinuses. A review of 28 cases with special reference to wood dust exposure. *Cancer* 54(3):482-488.  10 Mitchell EH, Diaz A, Yilmaz T, Roberts D, Levine N, DeMonte F, Hanna EY and Kupferman ME (2012). Multimodality treatment for sinonasal neuroendocrine carcinoma. *Head Neck* 34(10):1372-1376.  11 Smith SR, Som P, Fahmy A, Lawson W, Sacks S and Brandwein M (2000). A clinicopathological study of sinonasal neuroendocrine carcinoma and sinonasal undifferentiated carcinoma. *Laryngoscope* 110(10 Pt 1):1617-1622.  12 Moreno MA, Roberts DB, Kupferman ME, DeMonte F, El-Naggar AK, Williams M, Rosenthal DS and Hanna EY (2010). Mucosal melanoma of the nose and paranasal sinuses, a contemporary experience from the M. D. Anderson Cancer Center. *Cancer* 116(9):2215-2223. |  |
| Non-core | TUMOUR FOCALITY | Single selection value list:  • Cannot be assessed  • Unifocal  • Multifocal, specify number of tumours in specimen | Multiple, different histologic primaries should be reported in separate datasets. “Multifocal” can be used for microscopic foci of in situ or invasive carcinoma adjacent to the primary. |  |
| Core and  Non-core | TUMOUR DIMENSIONS | Numeric:  • Maximum tumour dimension (largest tumour) \_\_\_ mm  Non-core  • Additional dimensions (largest tumour)  \_\_\_ mm x \_\_\_ mm  OR  • Cannot be assessed, specify | The maximum diameter of the tumour should be possibly assessed on the unfixed specimen to avoid size underestimation resulting from formalin fixation-induced shrinkage. Care should be taken not to overestimate tumour size by including areas of adjacent non-neoplastic tissue. The gross assessment of tumour size should be confirmed microscopically and in cases where non-neoplastic tissue has been mistakenly incorporated into the tumour measurement, tumour size should be adjusted accordingly. If tumour dimensions are estimated only microscopically, then “at least” should be added to indicate that the measurement is an underestimation resulting from fixation and tissue processing.  The option “Cannot be assessed” can be used when the tumour is submitted in fragments, as in endoscopic resections. In these cases, radiographic imaging may also be considered to determine tumour dimensions. |  |
| Core | HISTOLOGICAL TUMOUR TYPE | Multi selection value list (select all that apply):  • Keratinising squamous cell carcinoma  • Non-keratinising squamous cell carcinoma  • Spindle cell squamous carcinoma  • NUT carcinoma  • Other squamous cell carcinoma variant, specify  • Sinonasal undifferentiated carcinoma  • Lymphoepithelial carcinoma  • Neuroendocrine carcinoma  Single selection value list:   * Small cell neuroendocrine carcinoma * Large cell neuroendocrine carcinoma   • Adenocarcinoma  Single selection value list:   * Intestinal-type adenocarcinoma * Non-intestinal-type adenocarcinoma   • Salivary type carcinomas, specify  • Other carcinoma type, specify  • Cannot be assessed, specify | All sinonasal tumours should be given a type based on the most recent edition of the World Health Organization (WHO) Classification of Head and Neck Tumours.1 The list of histologic types discussed in the chapter on sinonasal tumours in the 4th Edition of the WHO does not include some squamous cell carcinoma variants and salivary gland type tumours because they are described in sections devoted to other sites where they are more commonly encountered.  The sinonasal tract gives rise to a very large and diverse group of carcinomas, which may arise from the surface epithelium or the underlying seromucinous glands. Squamous cell carcinoma is, by far, the most common tumour to occur in the sinonasal tract, and it is subdivided primarily into keratinizing and non-keratinizing subtypes. Additional subtypes (e.g. spindle cell, basaloid, adenosquamous) are rare but should be noted if present. Sinonasal undifferentiated carcinoma, lymphoepithelial carcinoma, NUT carcinoma, and neuroendocrine carcinomas are also recognized tumour types of presumed surface origin. Adenocarcinomas of the sinonasal tract can be of surface or seromucinous gland origin. The surface-type adenocarcinomas should be subdivided into intestinal and non-intestinal types, while the seromucinous (minor salivary) gland carcinomas should be typed by the WHO classification of salivary gland tumours; adenoid cystic carcinoma is most common.  Additional tumour types were included as provisional entities in the WHO classification may be mentioned at the pathologist’s discretion. These include human papillomavirus (HPV)-related multiphenotypic sinonasal carcinoma, *SMARCB1* (INI1) deficient sinonasal carcinoma, and sinonasal renal cell-like adenocarcinoma.  Accurate tumour typing is important because specific tumour types are associated with different prognoses and, in some cases, different treatments. For example, sinonasal undifferentiated carcinoma and NUT carcinoma have very poor outcomes while low-grade forms of non-intestinal type adenocarcinoma behave in a very indolent manner. As another example, lymphoepithelial carcinoma is known to respond well to external beam radiation, while salivary-type adenocarcinomas are, as a group, not highly radiosensitive.  Diagnostic accuracy is also expected to take on additional importance in the future as targeted, molecular-based therapies become more prominent. A notable example is NUT carcinoma, for which trials using bromodomain inhibitors are ongoing.2 The use of targeted therapies may also be an option for certain intestinal-type adenocarcinomas in the future.3,4    **WHO classification of tumours of the nasal cavity, paranasal sinuses and skull basea**1   | **Descriptor** | **ICD-O codes** | | --- | --- | | **Carcinomas** |  | | Keratinising squamous cell carcinoma | 8071/3 | | Non-keratinising squamous cell carcinoma | 8072/3 | | Spindle cell squamous carcinoma | 8074/3 | | Lymphoepithelial carcinoma | 8082/3 | | Sinonasal undifferentiated carcinoma | 8020/3 | | NUT carcinoma | 8023/3 | | Neuroendocrine carcinoma |  | | Small cell neuroendocrine carcinoma | 8041/3 | | Large cell neuroendocrine carcinoma | 8013/3 | | Adenocarcinoma |  | | Intestinal-type adenocarcinoma | 8144/3 | | Non-intestinal-type adenocarcinoma | 8140/3 |   a The morphology codes are from the International Classification of Diseases for Oncology (ICD-O). Behaviour is coded /0 for benign tumours; /1 for unspecified, borderline, or uncertain behaviour; /2 for carcinoma in situ and grade III intraepithelial neoplasia; and /3 for malignant tumours.  © WHO/IARC. Reproduced with permission  **References**  1 El-Naggar A, Chan JKC, Grandis JR, Takata T, Slootweg PJ (eds) (2017). *WHO Classification of Head and Neck Tumours (4th Edition)*. IARC, Lyon, France.  2 Stathis A, Zucca E, Bekradda M, Gomez-Roca C, Delord JP, de La Motte Rouge T, Uro-Coste E, de Braud F, Pelosi G and French CA (2016). Clinical Response of Carcinomas Harboring the BRD4-NUT Oncoprotein to the Targeted Bromodomain Inhibitor OTX015/MK-8628. *Cancer Discov* 6(5):492-500.  3 Zebary A, Jangard M, Omholt K, Ragnarsson-Olding B and Hansson J (2013). KIT, NRAS and BRAF mutations in sinonasal mucosal melanoma: a study of 56 cases. *Br J Cancer* 109(3):559-564.  4 Hoeben A, van de Winkel L, Hoebers F, Kross K, Driessen C, Slootweg P, Tjan-Heijnen VC and van Herpen C (2016). Intestinal-type sinonasal adenocarcinomas: The road to molecular diagnosis and personalized treatment. *Head Neck* 38(10):1564-1570. | Value list from the WHO Classification of Head and Neck Tumours (2017).  Note that permission to publish the WHO classification of tumours may be needed in your implementation. It is advisable to check with the International Agency for Research on Cancer (IARC). |
| Core | HISTOLOGICAL TUMOUR GRADE | Single selection value list:  • Not applicable  • GX: Cannot be assessed  • G1: Well differentiated  • G2: Moderately differentiated  • G3: Poorly differentiated  • G4: Undifferentiated  • Other, specify  • Cannot be assessed, specify | A tiered grading system is used for squamous cell carcinoma (based on degree of differentiation) and should also be used sinonasal adenocarcinoma (which, according to the WHO Classification can be distinguished in low and high grade), as well as some salivary gland tumours (e.g. adenoid cystic carcinoma, mucoepidermoid carcinoma, etc.). Squamous cell carcinomas are graded with a 3-tiered system based on the degree the tumour cells differentiate. Undifferentiated tumours that show virtually no evidence of histologic differentiation should be considered grade 4. Salivary gland neoplasms have grading systems unique to some tumours that generally require quantification and assessment of a number of histologic features.1 The grading of non-salivary-gland-type adenocarcinomas is based on the presence of necrosis and mitotic activity.2 Tubulo-papillary intestinal type adenocarcinoma can be graded as well, moderately, or poorly differentiated, while mucinous adenocarcinomas are either moderately differentiated (alveolar) or poorly differentiated (signet ring cell).3 Finally, grading can also be performed with neuroendocrine carcinomas; however, within the sinonasal tract, almost all cases are high grade. The reproducibility and prognostic value of the various grading systems remain debatable.  **References**  1 Seethala RR (2011). Histologic grading and prognostic biomarkers in salivary gland carcinomas. *Adv Anat Pathol* 18(1):29-45.  2 Heffner DK, Hyams VJ, Hauck KW and Lingeman C (1982). Low-grade adenocarcinoma of the nasal cavity and paranasal sinuses. *Cancer* 50(2):312-322.  3 Stelow EB, Franchi A, Wenig BM (2017). Intestinal type adenocarcinoma. In: Tumours of the nasal cavity, paranasal sinuses and skull base. In: *WHO Classification of Head and Neck Tumours (4th Edition)*, El-Naggar A CJ, Grandis JR, Takata T, Slootweg PJ (eds), IARC, Lyon, France. |  |
| Core | BONE/CARTILAGE INVASION | Single selection value list:  • Not identified  • Present   * Erosive (cortical) * Infiltrative (medullary involvement)   • Cannot be assessed, specify | Bone and/or cartilage invasion is a frequent finding in sinonasal carcinomas. Both bone erosion and destruction have to be reported as part of the definition of the primary tumour in the TNM staging system. |  |
| Core | PERINEURAL INVASION | Single selection value list:  • Not identified  • Present  • Cannot be assessed, specify | The frequency of perineural invasion in sinonasal carcinomas is lower than other head and neck sites, and varies according to the histologic subtype, being most frequent in adenoid cystic carcinoma, sinonasal undifferentiated carcinoma and squamous cell carcinoma.1,2 In sinonasal carcinomas, perineural invasion is associated with a high rate of positive margins, with maxillary origin, and with previous surgical treatment, but it is not an independent prognostic factor of outcome.1  **References**  1 Gil Z, Carlson DL, Gupta A, Lee N, Hoppe B, Shah JP and Kraus DH (2009). Patterns and incidence of neural invasion in patients with cancers of the paranasal sinuses. *Arch Otolaryngol Head Neck Surg* 135(2):173-179.  2 Hanna E, Vural E, Prokopakis E, Carrau R, Snyderman C and Weissman J (2007). The sensitivity and specificity of high-resolution imaging in evaluating perineural spread of adenoid cystic carcinoma to the skull base. *Arch Otolaryngol Head Neck Surg* 133(6):541-545. |  |
| Core | LYMPHOVASCULAR INVASION | Single selection value list:  • Not identified  • Present  • Cannot be assessed, specify | It consists in the presence of neoplastic cells within an endothelial-lined space, either lymphatic or venous, and should be distinguished from retraction artefact. Immunohistochemical staining for an endothelial marker may help in this distinction.  Lymphovascular invasion is reported in up to 60% of sinonasal squamous cell carcinomas, but its clinical significance at this anatomic site remains to be determined.1  **References**  1 Gil Z, Carlson DL, Gupta A, Lee N, Hoppe B, Shah JP and Kraus DH (2009). Patterns and incidence of neural invasion in patients with cancers of the paranasal sinuses. *Arch Otolaryngol Head Neck Surg* 135(2):173-179. |  |
| Core | MARGIN STATUS | Single selection value list/text/numeric:  Invasive carcinoma  • Involved   * Specify margin(s), if possible   • Not involved   * Distance from invasive tumour to:   Deep margin \_\_\_ mm  Mucosal margin \_\_\_ mm   * Distance not assessable   **Carcinoma in situ/high-grade dysplasia\*\***  • Involved   * Specify margin(s), if possible   • Not involved   * Distance from closest margin   \_\_\_ mm   * Distance not assessable * Specify closest margin, if possible   •Cannot be assessed, specify | Ideally, the resection specimen would be handed over from surgeon to pathologist directly for orientation and clarification of surgical margins. Failing this, the margins should be labelled by the surgeon and/or illustrated with a diagram. Specimens from endoscopic tumour resections should also be labelled. If the margins are sent separately, for frozen section or otherwise, identification of their site in relation to the resection specimen should be clarified by the surgeon. The surgical margins, both mucosal and deep, should be thoroughly sampled. A positive or close margin will usually result in postoperative radiotherapy and treatment associated morbidity at this site may be severe. Skin and bone margins may also require documentation depending upon the type of resection.  Evidence relating to margins at this specific site is lacking and therefore extrapolated from other head and neck sites, the oral cavity being the most studied. The literature would generally support 5 mm as a prognostically relevant pathologic **clear** margin.1,2 This is best considered the minimum acceptable margin and is not a guarantee of lack of local recurrence which can be up to 25% with a clear margin.2,3 Values ranging from 3 mm to 7 mm have been put forward.1,4 In lower stage tumours, without other adverse variables, a margin less than 5 mm may be adequate5,6 so that in considering adjuvant therapy, other features of the tumour must be taken into account. The evaluation of margins and the treatment choices should also be made considering the complex anatomy of this area. For example, a sinonasal adenocarcinoma can have pushing margins at the periorbital tissues without infiltration, and in this case no orbital exenteration is needed to achieve clear margins >5 mm.  There is no agreed-upon definition of what constitutes a **close** margin, as the effective cut off varies between studies depending upon anatomic subsite, tumour stage and other adverse pathologic variables.7 Tumours with close margins carry an increased risk for local recurrence1,7,8 butthere is significantly better overall survival than for involved margins.9  Several studies support the definition of a **positive** margin to be invasive carcinoma at the margin1,6,9 although <1 mm is also used.10 Most studies also consider carcinoma in situ/high-grade dysplasia as a positive margin.1 The presence of dysplasia at the margin is associated with a significant risk of local recurrence11 and development of a second primary.12  Information regarding the distance of invasive carcinoma, carcinoma in situ, or high-grade dysplasia from the nearest margin should be recorded where possible.  While there is no standard recommendation for the other histologic types of carcinoma, adherence to the recommendations for squamous cell carcinoma is acceptable.  **References**  1 Hinni ML, Ferlito A, Brandwein-Gensler MS, Takes RP, Silver CE, Westra WH, Seethala RR, Rodrigo JP, Corry J, Bradford CR, Hunt JL, Strojan P, Devaney KO, Gnepp DR, Hartl DM, Kowalski LP, Rinaldo A and Barnes L (2013). Surgical margins in head and neck cancer: a contemporary review. *Head Neck* 35(9):1362-1370.  2 Anderson CR, Sisson K and Moncrieff M (2015). A meta-analysis of margin size and local recurrence in oral squamous cell carcinoma. *Oral Oncol* 51(5):464-469.  3 Brandwein-Gensler M, Teixeira MS, Lewis CM, Lee B, Rolnitzky L, Hille JJ, Genden E, Urken ML and Wang BY (2005). Oral squamous cell carcinoma: histologic risk assessment, but not margin status, is strongly predictive of local disease-free and overall survival. *Am J Surg Pathol* 29(2):167-178.  4 Liao CT, Chang JT, Wang HM, Ng SH, Hsueh C, Lee LY, Lin CH, Chen IH, Huang SF, Cheng AJ and Yen TC (2008). Analysis of risk factors of predictive local tumor control in oral cavity cancer. *Ann Surg Oncol* 15(3):915-922.  5 Dik EA, Willems SM, Ipenburg NA, Adriaansens SO, Rosenberg AJ and van Es RJ (2014). Resection of early oral squamous cell carcinoma with positive or close margins: relevance of adjuvant treatment in relation to local recurrence: margins of 3 mm as safe as 5 mm. *Oral Oncol* 50(6):611-615.  6 Ch'ng S, Corbett-Burns S, Stanton N, Gao K, Shannon K, Clifford A, Gupta R and Clark JR (2013). Close margin alone does not warrant postoperative adjuvant radiotherapy in oral squamous cell carcinoma. *Cancer* 119(13):2427-2437.  7 Alicandri-Ciufelli M, Bonali M, Piccinini A, Marra L, Ghidini A, Cunsolo EM, Maiorana A, Presutti L and Conte PF (2013). Surgical margins in head and neck squamous cell carcinoma: what is 'close'? *Eur Arch Otorhinolaryngol* 270(10):2603-2609.  8 Bradley PJ, MacLennan K, Brakenhoff RH and Leemans CR (2007). Status of primary tumour surgical margins in squamous head and neck cancer: prognostic implications. *Curr Opin Otolaryngol Head Neck Surg* 15(2):74-81.  9 Sutton DN, Brown JS, Rogers SN, Vaughan ED and Woolgar JA (2003). The prognostic implications of the surgical margin in oral squamous cell carcinoma. *Int J Oral Maxillofac Surg* 32(1):30-34.  10 Dillon JK, Brown CB, McDonald TM, Ludwig DC, Clark PJ, Leroux BG and Futran ND (2015). How does the close surgical margin impact recurrence and survival when treating oral squamous cell carcinoma? *J Oral Maxillofac Surg* 73(6):1182-1188.  11 Jerjes W, Upile T, Petrie A, Riskalla A, Hamdoon Z, Vourvachis M, Karavidas K, Jay A, Sandison A, Thomas GJ, Kalavrezos N and Hopper C (2010). Clinicopathological parameters, recurrence, locoregional and distant metastasis in 115 T1-T2 oral squamous cell carcinoma patients. *Head Neck Oncol* 2:9.  12 Slootweg PJ, Hordijk GJ, Schade Y, van Es RJ and Koole R (2002). Treatment failure and margin status in head and neck cancer. A critical view on the potential value of molecular pathology. *Oral Oncol* 38(5):500-503. | \*\* High-grade dysplasia is synonymous with moderate/severe dysplasia. |
| Non-core | COEXISTENT PATHOLOGY | Multi selection value list (select all that apply):  • None identified  OR  • Carcinoma in situ  • Sinonasal papilloma  • Intestinal metaplasia  • Squamous metaplasia  • Epithelial hyperplasia  • Epithelial dysplasia, specify  • Other, specify | The presence of coexistent pathology can be used as evidence for histologic classification of the tumour. This is especially true with spindle cell carcinoma or other less differentiated variants of squamous cell carcinoma that arise from and are often associated with overlying squamous dysplasia/carcinoma in situ.1  **References**  1 Thompson LD, Wieneke JA, Miettinen M and Heffner DK (2002). Spindle cell (sarcomatoid) carcinomas of the larynx: a clinicopathologic study of 187 cases. *Am J Surg Pathol* 26(2):153-170. |  |
| Non-core | ANCILLARY STUDIES | Single selection value list:  • Not performed  • Performed, specify | Ancillary studies are variably needed for the diagnosis of specific entities at this site. For example, NUT carcinoma is recognized by the presence of nuclear protein in testis (NUT) gene rearrangement or positivity with the C52 monoclonal antibody against NUT protein.1 The diagnosis of HPV-related multiphenotypic sinonasal carcinoma requires HPV specific testing as part of the tumour definition,2 while for the diagnosis of *SMARCB1* (INI1)-deficient carcinoma , loss of nuclear immunohistochemical staining for INI1 is needed.3  In poorly differentiated malignancies, immunohistochemical markers can be used to assign a tumour to a specific category. p40, p63 and cytokeratin 5/6 are useful markers of squamous differentiation, while markers of intestinal differentiation, such as cytokeratin 20 and CDX2, help in the diagnosis of intestinal type adenocarcinoma. Neuroendocrine carcinomas can be diagnosed with the support of positive staining with at least one neuroendocrine marker.  A subset of sinonasal carcinomas appears to be related to high risk HPV, including non-keratinizing squamous cell carcinoma, basaloid squamous cell carcinoma, papillary squamous cell carcinoma, adenosquamous carcinoma, and conventional keratinizing squamous cell carcinoma.4-9 However, the clinical significance of these findings is still debated, and HPV testing is considered investigational in this context.  **References**  1 Haack H, Johnson LA, Fry CJ, Crosby K, Polakiewicz RD, Stelow EB, Hong SM, Schwartz BE, Cameron MJ, Rubin MA, Chang MC, Aster JC and French CA (2009). Diagnosis of NUT midline carcinoma using a NUT-specific monoclonal antibody. *Am J Surg Pathol* 33(7):984-991.  2 Bishop JA, Ogawa T, Stelow EB, Moskaluk CA, Koch WM, Pai SI and Westra WH (2013). Human papillomavirus-related carcinoma with adenoid cystic-like features: a peculiar variant of head and neck cancer restricted to the sinonasal tract. *Am J Surg Pathol* 37(6):836-844.  3 Agaimy A, Rau TT, Hartmann A and Stoehr R (2014). SMARCB1 (INI1)-negative rhabdoid carcinomas of the gastrointestinal tract: clinicopathologic and molecular study of a highly aggressive variant with literature review. *Am J Surg Pathol* 38(7):910-920.  4 Bishop JA, Antonescu CR and Westra WH (2014). SMARCB1 (INI-1)-deficient carcinomas of the sinonasal tract. *Am J Surg Pathol* 38(9):1282-1289.  5 El-Mofty SK and Lu DW (2005). Prevalence of high-risk human papillomavirus DNA in nonkeratinizing (cylindrical cell) carcinoma of the sinonasal tract: a distinct clinicopathologic and molecular disease entity. *Am J Surg Pathol* 29(10):1367-1372.  6 Larque AB, Hakim S, Ordi J, Nadal A, Diaz A, del Pino M, Marimon L, Alobid I, Cardesa A and Alos L (2014). High-risk human papillomavirus is transcriptionally active in a subset of sinonasal squamous cell carcinomas. *Mod Pathol* 27(3):343-351.  7 Bishop JA, Guo TW, Smith DF, Wang H, Ogawa T, Pai SI and Westra WH (2013). Human papillomavirus-related carcinomas of the sinonasal tract. *Am J Surg Pathol* 37(2):185-192.  8 Laco J, Sieglova K, Vosmikova H, Dundr P, Nemejcova K, Michalek J, Celakovsky P, Chrobok V, Mottl R, Mottlova A, Tucek L, Slezak R, Chmelarova M, Sirak I, Vosmik M and Ryska A (2015). The presence of high-risk human papillomavirus (HPV) E6/E7 mRNA transcripts in a subset of sinonasal carcinomas is evidence of involvement of HPV in its etiopathogenesis. *Virchows Arch* 467(4):405-415.  9 Lewis JS, Jr. (2016). Sinonasal Squamous Cell Carcinoma: A Review with Emphasis on Emerging Histologic Subtypes and the Role of Human Papillomavirus. *Head Neck Pathol* 10(1):60-67. |  |
| Core | PATHOLOGICAL STAGING (UICC TNM 8th edition)  TNM descriptors | Choose if applicable:  • m - multiple primary tumours  • r - recurrent  • y - post-therapy | The TNM classification attempts to describe the anatomic extent of cancer. Clinical classification (cTNM) is usually carried out by the referring physician before treatment during initial evaluation of the patient or when pathologic classification is not possible. The objective of this classification is to aid the clinician in planning treatment, give some indication of prognosis, assist in the evaluation of the results of therapy and facilitate exchange of information.  By American Joint Committee on Cancer (AJCC)/Union for International Cancer Control (UICC) convention, the designation “T” refers to a primary tumour that has not been previously treated. The symbol “p” refers to the pathologic classification of the TNM, as opposed to the clinical classification, and is based on gross and microscopic examination of the resected tumour. pT entails a resection of the primary tumour or biopsy adequate to evaluate the highest pT category, pN entails removal of nodes adequate to validate lymph node metastasis, and pM implies microscopic examination of distant metastatic lesions.  For identification of special cases of pTNM classifications, the “m” suffix and “y” and “r” prefixes are used. Although they do not affect the stage grouping, they indicate cases needing separate analysis. The “m” suffix indicates the presence of multiple primary tumours in a single site and is recorded in parentheses: pT(m)NM. The “y” prefix indicates those cases in which classification is performed during or following initial multimodality therapy (ie, neoadjuvant chemotherapy, radiation therapy, or both chemotherapy and radiation therapy). The cTNM or pTNM category is identified by a “y” prefix. The ycTNM or ypTNM categorizes the extent of tumour actually present at the time of that examination. The “y” categorization is not an estimate of tumour prior to multimodality therapy (i.e. before initiation of neoadjuvant therapy).  The “r” prefix indicates a recurrent tumour when staged after a documented disease-free interval, and is identified by the “r” prefix: rTNM. The R classifier for residual tumour is not recommended for use in the setting of head and neck cancers.  ***TNM Descriptors***  **T – Primary tumour**  TX Primary tumour cannot be assessed  T0 No evidence of primary tumour  Tis Carcinoma in situ  For the pN classification of regional lymph nodes, see ICCR *Nodal excisions and neck dissection specimens* dataset.1  **References**  1 ICCR (International Collaboration on Cancer Reporting) Nodal excisions and neck dissection specimens for Head & Neck Tumours Histopathology Reporting Guide. Available from: http://www.iccr-cancer.org/datasets/published-datasets/head-neck (Accessed 13th September 2018). | Note that permission to publish the TNM cancer staging tables may be needed in your implementation. It is advisable to check.  Reproduced with permission. Source: UICC TNM Classification of Malignant Tumours, 8th Edition, eds James D. Brierley, Mary K. Gospodarowicz, Christian Wittekind. 2017, Publisher Wiley-Blackwell. |
| Core | Primary tumour (pT) | Single selection value list:  • TX Primary tumour cannot be assessed  • Tis Carcinoma in situ |  | Note that the results of lymph node/neck dissection are derived from a separate dataset. |
| Core | Maxillary sinus | Single selection value list:  • T1 Tumour limited to the mucosa with no erosion or destruction of bone  • T2 Tumour causing bone erosion or destruction, including extension into the hard palate and/or middle nasal meatus, except extension to posterior wall of maxillary sinus and pterygoid plates  • T3 Tumour invades any of the following: bone of posterior wall of maxillary sinus, subcutaneous tissues, floor or medial wall of orbit, pterygoid fossa, or ethmoid sinuses  • T4a Tumour invades any of the following: anterior orbital contents, skin of cheek, pterygoid plates, infratemporal fossa, cribriform plate, sphenoid or frontal sinuses  • T4b Tumour invades any of the following: orbital apex, dura, brain, middle cranial fossa, cranial nerves other than maxillary division of trigeminal nerve (V2), nasopharynx, or clivus |  |  |
|  | Nasal cavity and ethmoid sinus | Single selection value list:  • T1 Tumour restricted to one subsite of nasal cavity or ethmoid sinus, with or without bony invasion  • T2 Tumour involves two subsites in a single site or extends to involve an adjacent site within the nasoethmoidal complex, with or without bony invasion  • T3 Tumour extends to invade the medial wall or floor of the orbit, maxillary sinus, palate, or cribriform plate  • T4a Tumour invades any of the following: anterior orbital contents, skin of nose or cheek, minimal extension to anterior cranial fossa, pterygoid plates, sphenoid or frontal sinuses  • T4b Tumour invades any of the following: orbital apex, dura, brain, middle cranial fossa, cranial nerves other than V2, nasopharynx, or clivus |  |  |