NASOPHARYNGEAL CANCER TREATMENT

Effective Date: December, 2013

The recommendations contained in this guideline are a consensus of the Alberta Provincial Head and Neck Tumour Team synthesis of currently accepted approaches to management, derived from a review of relevant scientific literature. Clinicians applying these guidelines should, in consultation with the patient, use independent medical judgment in the context of individual clinical circumstances to direct care.
BACKGROUND

The most recent Canadian cancer statistics suggest approximately 250 new cases of nasopharyngeal cancer (NPC) are identified in Canada each year, resulting in 90 deaths.¹ NPC arises from the lining of the nasopharynx, the narrow tubular passage behind the nasal cavity and although rare in North America, is common in Southern China, Southeast Asia, North Africa and the Arctic. Risk factors for NPC include, race (Asian, African or Inuit ancestry), sex (male), diet (salt-cured foods) and exposure to the Epstein-Barr virus. Some studies have reported that tobacco use may contribute to the development of NPC, however, this link is much weaker than the link between tobacco use and most other types of head and neck cancers.

Three types of NPC have been classified by the World Health Organization including, keratinizing squamous cell carcinoma, non-keratinizing differentiated carcinoma and undifferentiated carcinoma. In North America, the keratinizing type is the most common. Although the different types of NPC exist, the treatment is usually the same and the stage of cancer is more important in predicting a person’s prognosis than the type. NPC is staged according to the tumour node metastasis (TNM) system. For more information on the TNM classifications, along with anatomic stage/prognostic groups, please refer to Appendix A.

NPC is commonly treated with radiotherapy (RT) and chemotherapy. Surgery at the primary site is not often used as first-line treatment because of the anatomical location of the nasopharynx and its proximity to critical neurovascular structures.

This guideline was developed to outline treatment recommendations for patients with NPC. These guidelines should be applied in the context of the recommendations outlined in Alberta Health Services, CancerControl Alberta guideline, The Organization and Delivery of Healthcare Services for Head and Neck Cancer Patients.

GUIDELINE QUESTIONS

1. What diagnostic and baseline investigations are recommended for patients with suspected or confirmed NPC?
2. What are the recommended treatment options for NPC?
3. What is the recommended follow-up after treatment for NPC?

DEVELOPMENT AND REVISION HISTORY

This guideline was reviewed and endorsed by the Alberta Provincial Head and Neck Tumour Team, which is comprised of over 150 health care professionals from various disciplines. Members of the Alberta Provincial Head and Neck Tumour Team include medical oncologists, radiation oncologists, surgical oncologists, neuroradiologists, nurses, pathologist, pharmacists and other allied health professionals. Evidence was selected and reviewed by a working group comprised of members from the Alberta Provincial Head and Neck Tumour Team and a Knowledge Management Specialist from the Guideline Utilization Resource Unit. A detailed description of the methodology followed during the guideline development process can be found in the Guideline Utilization Resource Unit Handbook.

This guideline was originally developed in December, 2013.
SEARCH STRATEGY

PubMED, MEDLINE and Cochrane Database of Systematic Reviews were searched from 2000 to April 5, 2013 for literature on the treatment of NPC. The search term nasopharyngeal neoplasm (MeSH) was used. Results were limited to phase III clinical trials, comparative studies, controlled clinical trials, guidelines, meta-analyses, multicenter studies, practice guidelines, randomized controlled trials and systematic reviews involving human subjects (19+ years) and published in English. Although phase II studies may be referenced in the discussion section, only phase III randomized studies and meta-analyses were considered for the literature search and review.

The National Guidelines Clearinghouse and SAGE Directory of Cancer Guidelines were also searched from 2008 to April 5, 2013 for guidelines on nasopharyngeal cancer.

TARGET POPULATION

The recommendations outlined in this guideline are intended for adults over the age of 18 years with NPC. Different principles may apply to pediatric patients.

RECOMMENDATIONS

The Alberta Provincial Head and Neck Tumour Team reviewed the recommendations of several different guidelines, including those from the European Society for Medical Oncology, the Spanish Society of Medical Oncology and the National Comprehensive Cancer Network. The Alberta Provincial Head and Neck Tumour Team have adopted the recommendations of the NCCN, with modifications to fit the Alberta context.

1. Diagnosis and baseline investigations. The following investigations are recommended at diagnosis for all patients with suspected or confirmed early stage NPC:
   - Complete head and neck examination
   - Nasopharyngeal exam and biopsy
   - Chest imaging
   - Magnetic resonance imaging (MRI) with gadolinium of nasopharynx and base of skull to clavicles and/or computed tomography (CT) with contrast
   - Positron emission tomography-computed tomography (PET-CT), as indicated; especially for nonkeratinizing histology, endemic phenotype, N2–3 disease, or stage III–IV disease
   - Examination under anesthesia with endoscopy, as indicated
   - Dental evaluation
   - Nutrition, speech and swallowing evaluation/therapy and audiogram

2. Treatment options. Patient participation in clinical trials is recommended. For standard treatment, all cases should be presented and discussed at a multidisciplinary Tumour Board to decide the best treatment option for each patient.

   Early-stage (T1, N0, M0): Definitive RT to the nasopharynx and elective RT to the neck is recommended.
   - Primary:
     - Total dose: 66–70 Gy
− Conventional fraction dose: 2.0–2.2 Gy
− Daily Monday-Friday in 6–7 weeks

• Neck:
  − Uninvolved nodal stations: 54–60 Gy
  − Conventional fraction dose: 1.6–2.0 Gy

Intensity-modulated radiation therapy (IMRT) should be used to reduce critical structure doses to acceptable levels.

Please click here to view the early-stage treatment algorithm.

**Advanced-stage (T1, N1–3; T2–4, Any N, M0):** Concurrent chemoradiotherapy (chemoRT) with cisplatin is recommended. Adjuvant chemotherapy using platinum (cisplatin or carboplatin)/5-fluorouracil (5-FU) can be considered following primary treatment. The choice of chemotherapy should be individualized based on patient characteristics (performance status and goals of therapy). Where there is clinical evidence of residual disease in the neck, neck dissection is recommended, if feasible.

Please click here to view the advanced-stage treatment algorithm.

**Distant metastatic disease (Any T, Any N, M1):** All treatment of patients with distant metastatic disease is palliative in nature. If available, patients should consider participating in a clinical trial. Palliative RT can be considered in select cases. In patients with good performance status, palliative chemotherapy may be considered. Referral to palliative care services can be offered to patients.

Please click here to view the distant metastatic disease treatment algorithm.

**Recurrent or persistent disease:** Restaging should be done to assess local, regional and distant disease. Biopsy of recurrent lesion(s) is recommended, as clinically indicated. Treatment should be individualized based on patient performance status and extent of disease.

Treatment options include:

- Salvage nasopharyngectomy, or
- Re-irradiation with brachytherapy, and/or
- Stereotactic guided treatments

Please click here to view the recurrent or persistent disease treatment algorithm.

**3. Follow-up and surveillance:** The following schedule should be taken into account to manage complications related to treatment, to detect disease recurrence and/or the development of new disease:

- Head and neck examination (note that the ranges are based on risk of relapse, second primaries, treatment sequelae, and toxicities):
  - Year 1, every 1 to 3 months
  - Year 2, every 2 to 6 months
  - Year 3–5, every 4 to 8 months
  - After 5 years, annually, as clinically indicated
• Post-treatment baseline imaging of primary and neck, if treated, within 6 months of treatment for T3–4 or N2–3 disease only; further reimaging, as indicated
• Annual thyroid-stimulating hormone (TSH) screening up to 5 years
• Speech/swallowing assessment at 6 and 12 months post-RT; additional assessment and rehabilitation, as clinically indicated
• Hearing evaluation and rehabilitation, as clinically indicated
• Follow-up with a registered dietitian to evaluate nutritional status and until the patient achieves a nutritionally stable baseline
• Routine hospital-based dental follow-up and evaluation up to 3 years

DISCUSSION

Initial Work-Up and Supportive Care Evaluation

NPC is most often diagnosed when an individual goes to their physician with a lump in the neck. A complete head and neck examination is required to begin to diagnose NPC. Attention should be paid to the most common presenting symptoms including a neck mass, cervical lymphadenopathy and bilateral involvement. Epistaxis (nasal bleeding), nasal congestion, hearing loss, otitis media (middle ear infection) and headaches are also common symptoms. For individuals with suspected NPC, a more thorough examination of the nasopharynx by a specialist is needed. The actual diagnosis of NPC can only be confirmed with a tissue biopsy. Imaging studies using MRI with gadolinium and/or CT with contrast of the head and neck areas should be considered to evaluate the local and regional extent of disease. Also consider a chest X-ray to rule out pulmonary metastasis. In individual cases, PET-CT can be used to determine the extent of neck nodal disease and for the detection of occult metastatic disease. Dental evaluation is required in all patients who require radiation treatment, prior to the commencement of treatment to assess, restore or extract decayed teeth. Finally, nutrition, speech and swallowing multi-modal (i.e., clinical, instrumental and patient-report of perceived impairment) evaluation/therapy and audiogram are critical to optimize quality of life during and after treatment. Every patient should have regular, frequent access to speech and swallowing assessment and therapy during treatment. Assessment can be of instrumental and/or clinical nature. Every patient should have a program of preventative swallowing exercises and be encouraged to eat by mouth if aspiration does not compromise their medical condition.

Treatment for Patients with Early-Stage NPC (T1, N0, M0)

For patients with early stage NPC, optimal outcomes can be expected employing RT alone. Guidelines published by the European Society for Clinical Oncology (ESMO), National Comprehensive Cancer Network (NCCN) and the Spanish Society of Medical Oncology (SEOM) support this recommendation. Evidence suggests that the overall survival (OS) rate for patients with early stage NPC is approximately 80 percent to 90 percent with RT alone. Although a survival benefit for chemoRT over RT alone was suggested in a subgroup analysis of two phase III trials, patients with early stage NPC have largely been excluded from clinical trials using combined modality treatment, likely given the good treatment outcome after RT alone.

The consensus from the Alberta Provincial Head and Neck Tumour Team is that radiation doses of 66–70 Gy with 2.0–2.2 Gy/fraction over 6 to 7 weeks (daily, Monday to Friday) is needed for primary tumour treatment. For uninvolved nodal stations, a total dose of 54–60 Gy with 1.6–2.0 Gy/fraction is needed.
Two randomized studies have shown that IMRT is superior to conventional RT techniques in preserving parotid function and resulted in less severe late xerostomia (dry mouth) without affecting local control in patients with early stage NPC.7,8

Treatment for Patients with Advanced-Stage NPC (T1, N1–3; T2–4, Any N)

RT alone. Although patients with Stage I (called early-stage NPC) have good outcomes with RT alone, more intensive treatment strategies are recommended to manage advanced-stage disease; RT alone for advanced-stage disease should be limited to individuals who would not be candidates for systemic therapy.

While SEOM3 recommends RT alone for stage II (called intermediate-stage NPC), both ESMO2 and NCCN4 recommend concurrent chemotherapy. In a randomized phase III trial, 230 patients with stage II NPC were randomly assigned to RT or concurrent chemoRT. Results showed the addition of weekly cisplatin to RT statistically significantly improved the 5-year OS rate (from 85.8 percent to 94.5 percent), progression-free survival (PFS) (from 77.8 percent to 87.9 percent) and distant metastasis-free survival (from 83.9 percent to 94.8 percent).5 However the concurrent chemoRT arm experienced statistically significantly more acute toxic effects, including leucopenia/neutropenia, nausea/vomiting and mucositis. Late toxic effects were similar for the two groups. Although this trial suggests a benefit from a concurrent chemoRT approach for stage II NPC patient, further randomized trials are warranted to explore the role of concurrent chemoRT in the treatment of stage II NPC.

Concurrent chemoRT. ESMO, NCCN and SEOM all recommend concurrent chemoRT in patients with stage III and IV A-B NPC. The pooled-analysis by Baujat et al. of chemotherapy as an adjunct to RT in locally advanced NPC (n=1,753) found that the addition of chemotherapy to standard RT provides a small but significant survival benefit in patients with NPC.9 The pooled hazard ratio (HR) of death was 0.82 (95 percent confidence interval [CI] 0.71-0.95, p=0.006) corresponding to an absolute benefit of 6 percent at five years from chemotherapy (from 56 to 62 percent). The pooled HR of tumour failure or death was 0.76 (95 percent CI 0.67-0.86, p<0.00001) corresponding to an absolute event-free survival benefit of 10 percent at five years from chemotherapy (from 42 to 52 percent). A significant interaction was observed between chemotherapy timing and OS (p=0.005), explaining the heterogeneity observed in the treatment effect (p=0.03) with the highest benefit from concomitant chemotherapy. Similarly, a prospective randomized phase III trial reported on the outcomes of 284 patients randomized to concurrent chemoRT with cisplatin (20 mg/m² daily) plus 5-FU (400 mg/m² daily) administered as a 96-hour continuous infusion during weeks 1 and 5 of RT versus RT alone.10 Although significantly more toxicity was noted in the concurrent chemoRT arm, tumour relapse (26 percent vs. 46 percent), 5-year OS (72.3 percent vs. 54.2 percent, p=0.0022) and PFS (71.6 percent vs. 53.0 percent, p=0.0012) rates were superior in the chemoRT arm. In a second prospective randomized trial comparing concurrent cisplatin (40mg/m² weekly) to RT alone, while the unadjusted analysis showed a non-significant difference in 5-year OS between the treatment arms for the entire patient population (70.3 percent vs. 58.6 percent, p=0.65), subgroup analysis showed a statistically significant difference between the arms for T3/T4 stage (HR = 0.51 [95% CI = 0.3-0.88; p=0.013] favouring the chemoRT arm.11 Standard RT with weekly oxaliplatin (70 mg/m² over 2 hours weekly) has also been studied in the treatment of patients with locally advanced NPC. Finally, in a small prospective, randomized phase III trial of 115 patients, preliminary results suggest concurrent chemoRT with oxaliplatin is feasible and improves OS, relapse-free survival (RFS) and metastasis-free survival (MFS) rates.12
Adjuvant chemotherapy following concurrent chemoRT. Several randomized phase III trials have investigated the efficacy of concurrent chemoRT with or without adjuvant chemotherapy. ChemoRT followed by adjuvant chemotherapy has been shown to increase overall survival and decrease local, regional and distant recurrence rates without a substantial increase in local toxicity.

In the landmark phase III randomized Intergroup study 099, 147 patients with stage III and IV NPC were treated with either chemoRT followed by adjuvant chemotherapy or RT alone. The study was closed and reported on early because the hazard ratio (HR) between the RT and combined arm was 3.28. The 3-year OS estimate for the combination arm was 76 percent versus 46 percent for the RT arm (p<0.001). The 3-year PFS estimate for the combination arm was 66 percent versus 26 percent for the RT arm (p<0.001).

The chemotherapy regimen used in the Intergroup study is generally considered the standard. In the study, the investigational arm received chemotherapy with cisplatin (100 mg/m²) on days 1, 22 and 43 during RT. Following RT, chemotherapy with cisplatin (80 mg/m² on day 1) and fluorouracil (5-FU) (1,000 mg/m²/d on days 1 to 4) was administered every 4 weeks for three cycles. Alternative regimens that are easier to administer than cisplatin have also been investigated. In a prospective, randomized, non-inferiority, open trial comparing concurrent chemoRT with carboplatin to concurrent chemoRT with cisplatin in patients with locally advanced NPC (n=206), the toxicity and tolerability of the cisplatin containing regimen limited the number of patients who managed to complete the full course of treatment. In addition, there was no difference in terms of disease-free survival (DFS) and OS between the two regimens.

In a more recent phase III trial, patients with non-metastatic stage III or IV NPC were randomly assigned to concurrent chemoRT plus adjuvant chemotherapy or concurrent chemoRT alone (n=508). Patients in both arms received cisplatin weekly (40 mg/m²) up to 7 weeks with radiotherapy. The concurrent chemoRT plus adjuvant chemotherapy arm subsequently received adjuvant cisplatin (80 mg/m²) and 5-FU (800 mg/m² per day) every 4 weeks for 3 cycles. After a median follow-up of 37.8 months, the estimated 2-year failure-free survival rate was 86 percent in the concurrent chemoRT plus adjuvant chemotherapy arm versus 84 percent in the concurrent chemoRT only group (HR=0.74, 95% CI 0.49–1.10, p=0.13). However, several limitations are noteworthy including a short follow-up period, the exclusion of T3–4N0 patients and the variability of RT techniques used.

Two meta-analyses involving over ten randomized trials of more than 2,500 patients with advanced NPC reported an absolute benefit on OS of 4–6 percent at 5 years with the use of chemotherapy. However, the survival benefit of the addition of chemotherapy was noted when chemotherapy was given concomitantly with radiotherapy.

In summary, the evidence suggests that concurrent chemoRT should be considered for all advanced-stage patients; the addition of adjuvant chemotherapy should be based on the clinician’s judgment and the patient’s performance status and goals of therapy.

Neoadjuvant chemotherapy. Neoadjuvant chemotherapy alone prior to RT (i.e., without concurrent chemotherapy) is not routinely indicated for definitive treatment of locally advanced NPC when followed by RT. While the NCCN shows induction chemotherapy followed by chemoRT as a treatment option, there is major disagreement. Trials of neoadjuvant chemotherapy in patients with locoregionally advanced NPC followed by RT alone have failed to show significant survival benefits compared to RT alone. To evaluate the long-term outcome in patients with NPC treated with induction chemotherapy and RT versus RT alone, Chua et al. conducted a pooled data analysis of two phase III trials (n=784). Although the addition of cisplatin-based induction chemotherapy to RT was associated with a decrease in relapse by
14.3 percent and cancer-related deaths by 12.9 percent at 5 years, there was no improvement in OS (61.9 percent vs. 58.1 percent, p=0.092) because of more frequent late intercurrent deaths in the induction chemotherapy and radiotherapy arm.

Another treatment option under study is sequential therapy, the administration of induction chemotherapy followed by concurrent chemoRT. Preliminary results from a recent phase III study comparing chemotherapy neoadjuvantly or concurrently with RT for locoregionally advanced NPC patients (n=338) only showed an advantage of concurrent chemoRT over neoadjuvant chemotherapy in patients with limited N disease in MFS.26

Alternative RT schedules. Recent advances in radiobiology have allowed changes to conventional treatment modalities with the intention of achieving better locoregional control without increasing long-term toxicity. Increasing evidence exists that outcomes in head and neck squamous cell cancer may benefit from alternative fractionation schedules, including hyperfractionation and accelerated fractionation regimens.27,28 A phase III trial randomized 189 patients with T3–4, N0–1, M0 NPC to one of four arms, accelerated versus conventional RT, with or without adjuvant chemotherapy.29 All groups were given 2 Gy per fraction; the number of fractions per week was 5 in the conventional arms versus 6 in the accelerated arms. Patients assigned to chemoRT arms received concurrent cisplatin (100 mg/m²) every 3 weeks for 3 cycles followed by adjuvant cisplatin (80 mg/m²) plus 5-FU (1000 mg/m²/day) every 4 weeks for 3 cycles. The accelerated-fractionation RT plus concurrent-adjuvant chemotherapy arm achieved a significantly higher failure-free rate (88 percent at 5 years) than accelerated fractionation without chemotherapy (56 percent, p=0.001), or conventional fractionation with (65 percent, p=0.027) or without chemotherapy (63 percent, p=0.013). As compared with the conventional-fractionation RT alone arm, the increase in late toxicity was statistically insignificant (36 percent vs. 20 percent, p=0.25). Despite the favourable results, the authors note patients should be duly informed that the use of accelerated fractionation with chemotherapy currently remains experimental and vigilant follow-up is required if this therapy is selected.

Treatment for Patients with Distant Metastatic Disease (Any T, Any N, M1)

Treatment failures in patients with locally advanced NPC are mainly distant metastasis, which develop in approximately 20 percent of patients.30 For patients with distant metastasis, treatment is almost always palliative in nature. RT can be administered to palliate symptoms. Participation in a clinical trial, if available, is the preferred treatment option. In metastatic NPC patients with good performance status, cisplatin-containing regimens are accepted as the standard.31,32 Other active agents include taxanes, gemcitabine, oxaliplatin, vinorelbine, irinotecan, capecitabine, methotrexate and anthracyclines. Targeted therapies ( cetuximab, sorafenib, erlotinib, gefitinib) have been studied, but their role is currently investigational.33 Referral to palliative care programs should be considered early on in the patient’s care to help relieve suffering and improve quality of life. Speech-language pathologists should participate in the palliation of dysphagia. Clinical and instrumental assessment can be provided as necessary. Management of aspiration should take into account patient’s wishes and informed choice, as well as their tolerance of aspiration.

Treatment for Patients with Recurrent or Persistent Disease

Patients with recurrent or persistent NPC should be restaged after primary treatment to assess local, regional and distant disease. PET can detect head and neck tumour recurrence when it may be undetectable by other clinical methods.34 As clinically indicated a confirmatory needle biopsy of the area in
question is recommended. Treatment should be individualized based on patient performance status and extent of disease. According to Lee et al.\textsuperscript{35}, treatment options include salvage nasopharyngectomy, or re-irradiation with brachytherapy, and/or stereotactic guided treatments.

**Follow-up and Surveillance**

Similar to NCCN recommendations\textsuperscript{4}, in Alberta the follow-up of patients with NPC is recommended every 1 to 3 months in the first year after treatment, every 2 to 6 months in the second year, every 4 to 8 months in years 3 to 5 and then only yearly, as clinically indicated, in the period five years after treatment. Surveillance of TSH is recommended annually for up to 5 years. Additionally, speech/hearing and swallowing evaluation and rehabilitation are suggested, as clinically indicated. Follow-up with a registered dietitian to evaluate nutritional status and until the patient achieves a nutritionally stable baseline is recommended due to common weight loss in NPC patients. Finally, routine hospital-based dental follow-up and evaluation is recommended annually up to 3 years.
TREATMENT ALGORITHMS

Early-Stage (T1, N0, M0)

The Head and Neck Tumour Team encourages patient participation in clinical trials. In addition, all patient cases should be presented & discussed at a multidisciplinary Tumour Board.

**Workup**
- Complete head & neck examination
- Nasopharyngeal exam & biopsy
- Chest imaging
- Consider MRI with gadolinium of nasopharynx & base of skull to clavicles &/or CT with contrast
- PET-CT, as indicated
- Dental evaluation
- Nutrition, speech & swallowing evaluation/therapy & audiogram

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**T1, N0, M0**

**Treatment with definitive RT to nasopharynx & elective RT to neck**

**Definitive RT**
- Primary: 66-70 Gy (2.0-2.2 Gy/fraction; daily Mon-Fri) in 6-7 wks
- Neck
  - Uninvolved nodal stations 54-60 Gy (1.6-2.0 Gy/fraction)

IMRT recommended to minimize dose to critical structure

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**Follow-up and Surveillance**
- Head & neck exam:
  - Yr 1, q 1-3 mo
  - Yr 2, q 2-6 mo
  - Yr 3-5, q 4-8 mo
  - >5 yrs, q 12 mo as clinically indicated
- Post-treatment baseline imaging of primary & neck, if treated, within 6 mo of treatment; further reimaging as indicated
- Annual TSH screening up to 5 yrs
- Speech/swallowing assessment at 6 and 12 months post-RT; additional assessment and rehabilitation, as clinically indicated
- Hearing evaluation & rehabilitation, as clinically indicated
- Follow-up with a registered dietician to evaluate nutritional status and until the patient achieves a nutritionally stable baseline
- Routine hospital-based dental follow-up & evaluation up to 3 yrs
Advanced-Stage (T1, N1–3, T2–4, Any N, M0 and Any T, N, M1)

The Head and Neck Tumour Team encourages patient participation in clinical trials. In addition, all patient cases should be presented & discussed at a multidisciplinary Tumour Board.

**Workup**
- Complete head & neck examination
- Nasopharyngeal exam & biopsy
- Chest imaging
- Consider MRI with gadolinium of nasopharynx & base of skull to clavicles &/or CT with contrast
- PET-CT, as indicated
- Dental evaluation
- Nutrition, speech & swallowing evaluation/therapy & audiogram

**Concurrent chemo/RT**
Cisplatin + RT

Conventional fractionation:
- Primary & gross adenopathy: 66-70 Gy (2.0-2.2 Gy/fraction) in 6-7 weeks
- Neck:
  - Uninvolved nodal stations 54-60 Gy (1.6-2.0 Gy/fraction)
IMRT recommended to minimize dose to critical structures

**Consider adjuvant chemotherapy**
Platinum/5-FU

Complete clinical response in neck

Residual tumour in neck

**Observe**

**Neck dissection (if feasible)**

**Follow-up and Surveillance**
- Head & neck exam:
  - Yr 1, q 1-3 mo
  - Yr 2, q 2-6 mo
  - Yr 3-5, q 4-8 mo
  - >5 yrs, q 12 mo as clinically indicated
- Post-treatment baseline imaging of primary & neck, if treated, within 6 mo of treatment; further reimaging as indicated
- Annual TSH screening up to 5 yrs
- Speech/swallowing assessment at 6 and 12 months post-RT; additional assessment and rehabilitation, as clinically indicated
- Hearing evaluation & rehabilitation, as clinically indicated
- Follow-up with a registered dietician to evaluate nutritional status and until the patient achieves a nutritionally stable baseline
- Routine hospital-based dental follow-up & evaluation up to 3 yrs

**T1, N1-3; T2-4, Any N, M0**

**Any T, any N, M1**

All treatment is palliative in nature
- Consider clinical trial if available
- RT to palliate symptoms
- Palliative chemotherapy to be considered in patients with good performance status
- Referral to palliative care/palliative home care
Recurrent or Persistent Disease

The Head and Neck Tumour Team encourages patient participation in clinical trials. In addition, all patient cases should be presented & discussed at a multidisciplinary Tumour Board.

- Restage to assess recurrent or persistent disease – consider PET scan
- Biopsy of recurrent lesion(s), as clinically indicated

- Treatment should be individualized based on patient performance status and extent of disease

Local disease

- Salvage nasopharyngectomy, or
- Re-irradiation with brachytherapy, and/or
- Stereotactic guided treatments

Regional disease

See algorithm for Advanced-Stage Disease

Distant disease

See algorithm for Advanced-Stage Disease
GLOSSARY OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>5-FU</td>
<td>Fluorouracil</td>
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<tr>
<td>ChemoRT</td>
<td>Chemoradiotherapy</td>
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<td>CT</td>
<td>Computed tomography</td>
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<td>DFS</td>
<td>Disease-free survival</td>
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<td>ESMO</td>
<td>European Society for Medical Oncology</td>
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<td>HR</td>
<td>Hazard ratio</td>
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<tr>
<td>IMRT</td>
<td>Intensity-modulated radiation therapy</td>
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<td>MFS</td>
<td>Metastasis-free survival</td>
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<td>MRI</td>
<td>Magnetic resonance imaging</td>
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<td>MeSH</td>
<td>Medical Subject Heading</td>
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<td>NCCN</td>
<td>National Comprehensive Cancer Network</td>
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<td>NPC</td>
<td>Nasopharyngeal cancer</td>
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<td>OS</td>
<td>Overall survival</td>
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<tr>
<td>PET-CT</td>
<td>Positron emission tomography-computed tomography</td>
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<td>PFS</td>
<td>Progression-free survival</td>
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<td>RFS</td>
<td>Relapse-free survival</td>
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<td>RT</td>
<td>Radiotherapy</td>
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<td>SEOM</td>
<td>Spanish Society of Medical Oncology</td>
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<td>TNM</td>
<td>Tumour node metastasis</td>
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<td>TSH</td>
<td>Thyroid-stimulating hormone</td>
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DISSEMINATION

- Present the guideline at the local and provincial tumour team meetings and weekly rounds.
- Post the guideline on the Alberta Health Services website.
- Send an electronic notification of the new guideline to all members of CancerControl Alberta.

MAINTENANCE

A formal review of the guideline will be conducted at the Annual Provincial Meeting in 2015. If critical new evidence is brought forward before that time, however, the guideline working group members will revise and update the document accordingly.

CONFLICT OF INTEREST

Participation of members of the Alberta Provincial Head and Neck Tumour Team in the development of this guideline has been voluntary and the authors have not been remunerated for their contributions. There was no direct industry involvement in the development or dissemination of this guideline. CancerControl Alberta recognizes that although industry support of research, education and other areas is necessary in order to advance patient care, such support may lead to potential conflicts of interest. Some members of the Alberta Provincial Head and Neck Tumour Team are involved in research funded by industry or have other such potential conflicts of interest. However the developers of this guideline are satisfied it was developed in an unbiased manner.
REFERENCES


APPENDIX A

Table 1. TNM Classification\textsuperscript{36}

<table>
<thead>
<tr>
<th>Primary tumour (T)</th>
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<tr>
<td>TX</td>
<td>Primary tumour cannot be assessed</td>
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<tr>
<td>T0</td>
<td>No evidence of primary tumour</td>
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<tr>
<td>Tis</td>
<td>Carcinoma in situ</td>
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<tr>
<td>T1</td>
<td>Tumour confined to the nasopharynx, or tumour extends to oropharynx and/or nasal cavity without parapharyngeal extension (e.g. without posterolateral infiltration of tumour)</td>
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<tr>
<td>T2</td>
<td>Tumour with parapharyngeal extension (posterolateral infiltration of tumour)</td>
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<tr>
<td>T3</td>
<td>Tumour involves bony structure of skull base and/or paranasal sinuses</td>
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<tr>
<td>T4</td>
<td>Tumour with intracranial extension and/or involvement of cranial nerves, hypopharynx, or orbit, or with extension to the infratemporal fossa/masticator space</td>
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<th>Regional lymph nodes (N)</th>
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<td>NX</td>
<td>Regional nodes cannot be assessed</td>
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<td>N0</td>
<td>No regional lymph node metastasis</td>
</tr>
<tr>
<td>N1</td>
<td>Unilateral metastasis in cervical lymph nodes =6cm in greatest dimension, above the supraclavicular fossa and/or unilateral or bilateral retropharyngeal lymph nodes =6cm in greatest dimension (midline nodes are considered ipsilateral nodes)</td>
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<tr>
<td>N2</td>
<td>Bilateral metastasis in cervical lymph nodes =6cm in greatest dimension, above the supraclavicular fossa (midline nodes are considered ipsilateral nodes)</td>
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<tr>
<td>N3</td>
<td>Metastasis in a lymph node &gt;6cm and/or to the supraclavicular fossa (midline nodes are considered ipsilateral nodes)</td>
</tr>
<tr>
<td>N3a</td>
<td>&gt;6cm in dimension</td>
</tr>
<tr>
<td>N3b</td>
<td>Extension to the supraclavicular fossa</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distant metastasis (M)</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>M0</td>
<td>No distant metastasis</td>
</tr>
<tr>
<td>M1</td>
<td>Distant metastasis</td>
</tr>
</tbody>
</table>

Table 2. Anatomic Stage/Prognostic Groups\textsuperscript{36}

<table>
<thead>
<tr>
<th>Stage</th>
<th>T</th>
<th>N</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Tis</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>I</td>
<td>T1</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>II</td>
<td>T1</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td>III</td>
<td>T1</td>
<td>N2</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>N2</td>
<td>M0</td>
</tr>
<tr>
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<td>T3</td>
<td>N0</td>
<td>M0</td>
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<tr>
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<td>N1</td>
<td>M0</td>
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<td>N2</td>
<td>M0</td>
</tr>
<tr>
<td>IVA</td>
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<td>N0</td>
<td>M0</td>
</tr>
<tr>
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<td>T4</td>
<td>N1</td>
<td>M0</td>
</tr>
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<td>T4</td>
<td>N2</td>
<td>M0</td>
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<tr>
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<td>T Any</td>
<td>N3</td>
<td>M0</td>
</tr>
<tr>
<td>IVC</td>
<td>T Any</td>
<td>Any N</td>
<td>M1</td>
</tr>
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