American Cancer Society Head and Neck Cancer Survivorship Care Guideline

Ezra E. W. Cohen, MD[1]; Samuel J. LaMonte, MD, FACS[2]; Nicole L. Erb, BA[3]; Kerry L. Beckman, MPH, CHES[4]; Nader Sadeghi, MD[5]; Katherine A. Hutcheson, PhD[6]; Michael D. Stubblefield, MD[7]; Dennis M. Abbott, DDS[8]; Penelope S. Fisher, MS, RN, CORLN[9]; Kevin D. Stein, PhD[10]; Gary H. Lyman, MD, MPH, FASCO, FACP[11]; Mandi L. Pratt-Chapman, MA[12]

The American Cancer Society Head and Neck Cancer Survivorship Care Guideline was developed to assist primary care clinicians and other health practitioners with the care of head and neck cancer survivors, including monitoring for recurrence, screening for second primary cancers, assessment and management of long-term and late effects, health promotion, and care coordination. A systematic review of the literature was conducted using PubMed through April 2015, and a multidisciplinary expert workgroup with expertise in primary care, dentistry, surgical oncology, medical oncology, radiation oncology, clinical psychology, speech-language pathology, physical medicine and rehabilitation, the patient perspective, and nursing was assembled. While the guideline is based on a systematic review of the current literature, most evidence is not sufficient to warrant a strong recommendation. Therefore, recommendations should be viewed as consensus-based management strategies for assisting patients with physical and psychosocial effects of head and neck cancer and its treatment. **CA Cancer J Clin 2016;66:203-239. © 2016 American Cancer Society.**

Keywords: care coordination, clinical follow-up care, guidelines, head and neck cancer, late effects, long-term effects, primary care, quality of life, survivorship, survivorship care plan

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Introduction

Head and neck cancer (HNC) will account for an estimated 61,760 new cancer cases in the United States in 2016.[1] Currently, there are approximately 436,060 (3%) HNC survivors living in the United States,[2] accounting for 3% of all cancer survivors, and long-term survival is becoming more common in this population.[3]

Additional supporting information may be found in the online version of this article.

[1]Medical Oncologist, Moores Cancer Center, University of California at San Diego, La Jolla, CA; [2]Retired Head and Neck Surgeon, Former Associate Professor of Otolaryngology and Head and Neck Surgery, Louisiana State University Health and Science Center, New Orleans, LA; [3]Program Manager, National Cancer Survivorship Resource Center, American Cancer Society, Atlanta, GA; [4]Research Analyst-Survivorship, American Cancer Society, Atlanta, GA; [5]Professor of Surgery, Division of Otolaryngology-Head and Neck Cancer Surgery, and Director of Head and Neck Surgical Oncology, George Washington University, Washington, DC; [6]Associate Professor, Department of Head and Neck Surgery, Section of Speech Pathology and Audiology, The University of Texas MD Anderson Cancer Center, Houston, TX; [7]Medical Director for Cancer Rehabilitation, Kessler Institute for Rehabilitation, West Orange, NJ; [8]Chief Executive Officer, Dental Oncology Professionals, Garland, TX; [9]Clinical Instructor of Otolaryngology and Nurse, Miller School of Medicine, Department of Otolaryngology, Division of Head and Neck Surgery, University of Miami, Miami, FL; [10]Vice President, Behavioral Research, and Director, Behavioral Research Center, American Cancer Society, Atlanta, GA; [11]Co-Director, Hutchinson Institute for Cancer Outcomes Research, Fred Hutchinson Cancer Research Center, and Professor of Medicine, University of Washington School of Medicine, Seattle, WA; [12]Director, The George Washington University Cancer Institute, Washington, DC

Corresponding author: Nicole L. Erb, BA, Program Manager, National Cancer Survivorship Resource Center, American Cancer Society, Inc., 250 Williams Street, NW, Suite 600, Atlanta, GA, 30303; nicole.erb@cancer.org

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Tobacco use[4] and alcohol consumption combine to account for an estimated 75% of HNC cases.[5,6] In addition, the human papillomavirus (HPV) accounts for as many as 70% of oropharyngeal cancers.[5] HPV-related HNC is a biologically and clinically distinct disease from tobacco-related HNC, with now well described differences in molecular alterations, clinical presentation, and prognosis.[7,8] Approximately 20% of the population is positive for exposure to high-risk HPV.[9]

Standard management of HNC is based largely on anatomic considerations and TNM (tumor, lymph nodes, metastasis) stage. Early stage disease (stage I and II) is treated with a single modality—surgery or radiotherapy (RT)—depending primarily on tumor location but also on tumor extent, anticipated cure rate, and functional and esthetic outcome.[10] About 80% to 90% of early stage patients will go into remission. Advanced stage patients (stage III, IVa, and IVb) are treated with multimodal therapy, including surgery, RT, and chemotherapy.[10] The sequencing and combination of therapies are based on stage, tumor location, expertise of treating physicians, and patient preference.[10] Despite more aggressive treatment for advanced stage disease, cure rates remain low primarily because of locoregional recurrence. However, HPV-related HNC is associated with a significantly better prognosis even with stage IV disease, especially in never smokers. Cure rates, often based on 5-year survival rates, for HPV-related HNC in some large studies approaches 90%.[11]

Much of the current research in HNC is focused on personalizing therapy based on molecular phenotypes, improving treatment efficacy, and reducing long-term morbidity. The latter is predominantly being studied in HPV-related HNC, where reductions in radiation dose or volume are being studied with an aim to reduce acute and chronic toxicities.

Nearly a decade ago, a landmark report from the Institute of Medicine, *From Cancer Patient to Cancer Survivor: Lost in Transition*, highlighted the unique issues facing all cancer survivors as well as the growing need for guidance with respect to quality survivorship care.[12] The National Cancer Survivorship Resource Center (cancer.org/survivorshipcenter), a collaboration between the ACS, The George Washington University Cancer Institute, and the Centers for Disease Control (CDC) and Prevention, which is funded by a 5-year cooperative agreement from the CDC, developed these guideline recommendations in response to the need for guidance on how best to care for the growing number of HNC survivors.[13] For the purposes of this guideline, HNC includes the following cancer sites: oral cavity, larynx, tongue, lip, and pharynx, although many of the principles apply to cancers of the salivary glands, nasal and paranasal sinuses, and nasopharynx. Cancers of the brain, thyroid, and esophagus were not included because these cancers are very different in their symptoms and treatment than the previously listed cancers of the head and neck (HN).

Guideline Questions

The clinical practice guideline addresses 5 key areas of HNC survivorship care to provide recommendations on best practices in the management of adults after HNC treatment, focusing on the role of primary care clinicians and other clinicians who care for posttreatment HNC survivors. The 5 areas covered include: 1) surveillance for HNC recurrence, 2) screening for second primary cancers (SPCs), 3) assessment and management of physical and psychosocial long-term and late effects of HNC and treatment, 4) health promotion, and 5) care coordination and practice implications (see Table 1).

Methods

Methods used to develop this guideline were influenced by the American Cancer Society (ACS) cancer screening[15] and survivorship[16] care guidelines. Where appropriate, this guideline builds upon the recently published American Society of Clinical Oncology (ASCO) symptom-based guidelines for adult cancer survivors.[17-19] ASCO has symptom-based guidelines specific to fatigue,[19] chemotherapy-induced peripheral neuropathy,[17] and anxiety and depressive symptoms.[18]

Panel Formation

A multidisciplinary expert workgroup was formed and tasked with drafting the ACS Head and Neck Cancer Survivorship Care Guideline. Workgroup members had expertise in primary care, dentistry, surgical oncology, medical oncology, radiation oncology, clinical psychology, speech language pathology, physical medicine and rehabilitation, and nursing. In addition, an HNC cancer survivor was included to provide a patient perspective.

Literature Review

The literature review began with an environmental scan of existing guidelines and guidance developed by other organizations (eg, the National Comprehensive Cancer Network® [NCCN®],[20,21] ASCO[17-19]), specific medical centers (eg, The University of Texas MD Anderson Clinical Tools and Resources Head and Neck Cancer Survivorship algorithm, US Preventive Services Task Force[22]), and those available from other countries (eg, Australian Cancer Survivorship Centre).

Literature Search Strategy

A systematic review of the literature was conducted using PubMed for 2004 through April 2015. Studies on childhood cancers, qualitative studies, and non-English publications were excluded. Also excluded were studies that consisted of entirely non-North American populations, because HNC prevalence is higher in some countries due to lifestyle causes and differing etiology. Search terms included: cancer survivor AND review OR meta-analysis OR systematic review OR guidelines; guidance AND head and neck cancer OR head and neck cancer survivor; head and neck cancer patient post-treatment AND symptom management OR late effects OR long-term effects OR psychosocial care OR palliative care OR health promotion OR surveillance OR screening for new cancers OR self-management OR guidelines OR guidance OR follow up OR follow-up OR side effects OR (chemotherapy AND side effects) OR (radiation AND side effects), OR surgery OR treatment complications OR genetic counseling and testing OR survivor or patient interventions OR provider interventions OR provider education OR barriers. Additional search attempts included head and neck cancer OR head and neck cancer survivor OR head and neck cancer patient post-treatment AND (symptom-specific terms, such as swallowing, body image, neck dissection, etc).

The highest priority was given to articles that met the following criteria: peer-reviewed publication in English since 2004 unless a seminal article published before that date still carried the most weight, including randomized controlled trials (RCTs), prospective cohort studies, and population-based case-control studies; studies of more than 50 cancer cases analyzed and with high-quality assessment of covariates and analytic methods; and analyses controlled for important confounders (eg, preexisting comorbid conditions).

Workgroup members were also asked to consider the specific level of evidence (LOE) criteria (see Table 2: Levels of Evidence) along with consistency across studies and study designs; dose-response when presenting treatment impacts; race/ethnicity differences; and SPCs for which survivors are at high risk because of treatment and behavioral considerations. After finalization by the workgroup, the guideline manuscript was sent to additional internal and external experts for review and comment before submission for publication. The guideline summarizes literature with the highest level of evidence. A comprehensive list of evidence is available online (see Supporting Information Table 1). This is the most recent information as of the publication date. For updates and the most recent information, please visit cancer.org/professionals. On the basis of formal review of the emerging literature, the ACS will determine the need to update on a regular basis. At minimum, it will be updated every 5 years.

Guideline Disclaimer

The clinical practice guideline published herein is provided by the ACS to assist providers in clinical decision making. This information should not be relied upon as being complete or accurate, nor should it be considered as inclusive of all proper treatments or methods of care or as a statement of the standard of care. With the rapid development of scientific knowledge, new evidence may emerge between the time information is developed and when it is published or read. The information is not continually updated and may not reflect the most recent evidence. The information addresses only the topics specifically identified therein and is not applicable to other interventions, diseases, or stages of diseases.

This information does not mandate any particular course of medical care. Furthermore, the information is not intended to substitute for the independent professional judgment of the treating provider, as the information does not account for individual variation among patients. The use of words like "must," "must not," "should," and "should not" indicates that a course of action is recommended or not recommended for either most or many patients, but there is latitude for the treating physician to select other courses of action in individual cases. In all cases, the selected course of action should be considered by the treating provider in the context of treating the individual patient. Use of the information is voluntary. The ACS provides this information on an "as is" basis and makes no warranty, express or suggested, regarding the information. The ACS specifically disclaims any warranties of merchantability or fitness for a particular use or purpose. The ACS assumes no responsibility for any injury or damage to persons or property arising out of or related to any use of this information, or for any errors or omissions.

Guideline and Conflicts of Interest

The expert panel was assembled in accordance with the ACS Conflict of Interest Procedures. Members of the panel completed the ACS Guidelines Development Participant Disclosure Form and the International Committee of Medical Journal Editors Form for Disclosure of Potential Conflicts of Interest, which requires disclosure of financial and other interests that are relevant to the subject matter of the guideline, including relationships with commercial entities that are reasonably likely to experience direct regulatory or commercial impact as a result of promulgation of the guideline. Categories for disclosure include employment; leadership; stock or other ownership; honoraria, consulting, or advisory role; speaker's bureau; research funding; patents, royalties, other intellectual property; expert testimony; travel, accommodations, expenses; and other relationships. In accordance with the procedures, the majority

TABLE 1. The Bottom Line: Recommendations for the American Cancer Society Head and Neck Cancer Survivorship Care Guideline

Target population: Adult posttreatment head and neck cancer (HNC) survivors

Target audience: Primary care clinicians, medical oncologists, and other clinicians caring for HNC survivors

Methods: An expert panel was convened to develop clinical practice guideline recommendations based on a systematic review of the medical literature

ACS key recommendations for HNC survivorship care

Surveillance for HNC recurrence

History and physical

Recommendation 1.1. It is recommended that primary care clinicians: a) should individualize clinical follow-up care provided to HNC survivors based on age, specific diagnosis, and treatment protocol as recommended by the treating oncology team (LOE = 2A); b) should conduct a detailed cancer-related history and physical examination every 1–3 mo for the first y after primary treatment, every 2–6 mo in the second y, every 4–8 mo in y 3–5, and annually after 5 y (LOE = 2A);[10] c) should confirm continued follow-up with otolaryngologist or HNC specialist for HN-focused examination (LOE = 2A).

Surveillance education

Recommendation 1.2. It is recommended that primary care clinicians: a) should educate and counsel all HNC survivors about the signs and symptoms of local recurrence. (LOE = 0); b) should refer HNC survivors to an HNC specialist if signs and symptoms of local recurrence are present (LOE = 0).

Screening and early detection of second primary cancers (SPCs)

Recommendation 2.1. It is recommended that primary care clinicians: a) should screen HNC survivors for other cancers as they would for patients in the general population by adhering to the ACS Early Detection Recommendations (cancer.org/professionals; LOE = 0); b) should screen HNC survivors for lung cancer according to ASCO or NCCN[14] recommendations for annual lung cancer screening with LDCT for high-risk patients based on smoking history (LOE = 2A); c) should screen HNC survivors for another HN and esophageal cancer as they would for patients of increased risk (LOE = 0, IIA).

Assessment and management of physical and psychosocial long-term and late effects of HNC and its treatment

Recommendation 3.1. It is recommended that primary care clinicians should assess for long-term and late effects of HNC and its treatment at each follow-up visit (LOE = 0).

Spinal accessory nerve (SAN) palsy

Recommendation 3.2. It is recommended that primary care clinicians should refer HNC survivors with SAN palsy occurring postradical neck dissection to a rehabilitation specialist to improve range of motion and ability to perform daily tasks (LOE = IA).

Cervical dystonia/muscle spasms/neuropathies

Recommendation 3.3. It is recommended that primary care clinicians: a) should assess HNC survivors for cervical dystonia, which is characterized by painful dystonic spasms of the cervical muscles and can be caused by neck dissection, radiation, or both (LOE = 0); b) should refer HNC survivors to a rehabilitation specialist for comprehensive neuromusculoskeletal management if cervical dystonia or neuropathy is found (LOE = 0); c) should prescribe nerve-stabilizing agents, such as pregabalin, gabapentin, and duloxetine, or refer to a specialist for botulinum toxin type A injections into the affected muscles for pain management and spasm control as indicated (LOE = 0, IIA).

Shoulder dysfunction

Recommendation 3.4. It is recommended that primary care clinicians: a) should conduct baseline assessment of HNC survivor shoulder function posttreatment for strength, range of motion, and impingement signs, and continue to assess as follow-up for ongoing complications or worsening condition (LOE = IIA); b) should refer HNC survivors to a rehabilitation specialist for improvement to pain, disability, and range of motion where shoulder morbidity exists (LOE = IA).

Trismus

Recommendation 3.5. It is recommended that primary care clinicians: a) should refer HNC survivors to rehabilitation specialists and dental professionals to prevent trismus and to treat trismus as soon as it is diagnosed (LOE = 0); b) should prescribe nerve-stabilizing agents to combat pain and spasms, which may also ease physical therapy and stretching devices (LOE = IIA).

Dysphagia/aspiration/stricture

Recommendation 3.6. It is recommended that primary care clinicians: a) should refer HNC survivors presenting with complaints of dysphagia, postprandial cough, unexplained weight loss, and/or pneumonia to an experienced speech-language pathologist for instrumental evaluation of swallowing function to assess and manage dysphagia and possible aspiration (LOE = IIA); b) should recognize potential for psychosocial barriers to swallowing recovery and refer HNC survivors to an appropriate clinician if barriers are present (LOE = IIA); c) should refer to a speech-language pathologist for videofluoroscopy as the first-line test for HNC survivors with suspected stricture due to the high degree of coexisting physiologic dysphagia (LOE = IIA); d) should refer HNC survivors with stricture to a gastroenterologist or HN surgeon for esophageal dilation (LOE = IIA).

Gastroesophageal reflux disease (GERD)

Recommendation 3.7. It is recommended that primary care clinicians: a) should monitor HNC survivors for developing or worsening GERD, as it prevents healing of irradiated tissues and is associated with increased risk of HNC recurrence or SPCs (LOE = IIA); b) should counsel HNC survivors on an increased risk of esophageal cancer and the associated symptoms (LOE = IIA); c) should recommend PPIs or antacids, sleeping with a wedge pillow or 3-inch blocks under the head of the bed, not eating or drinking fluids for 3 h before bedtime, tobacco cessation, and avoidance of alcohol (LOE = IIA); d) should refer HNC survivors to a gastroenterologist if symptoms are not relieved by treatments listed in 3.7c (LOE = IIA).

Lymphedema

Recommendation 3.8. It is recommended that primary care clinicians: a) should assess HNC survivors for lymphedema using the NCI CTCAE v.4.03, or referral for endoscopic evaluation of mucosal edema of the oropharynx and larynx, tape measurements, sonography, or external photographs (LOE = IIA); b) should refer HNC survivors to a rehabilitation specialist for treatment consisting of MLD and, if tolerated, compressive bandaging (LOE = IIA).

TABLE 1. *Continued*

Fatigue

Recommendation 3.9. It is recommended that primary care clinicians: a) should assess for fatigue and treat any causative factors for fatigue, including anemia, thyroid dysfunction, and cardiac dysfunction (LOE = 0); b) should offer treatment or referral for factors that may impact fatigue (eg, mood disorders, sleep disturbance, pain, etc) for those who do not have an otherwise identifiable cause of fatigue (LOE = I); c) should counsel HNC survivors to engage in regular physical activity and refer for CBT as appropriate (LOE = I).

Altered or loss of taste

Recommendation 3.10. It is recommended that primary care clinicians should refer HNC survivors with altered or loss of taste to a registered dietitian for dietary counseling and assistance in additional seasoning of food, avoiding unpleasant food, and expanding dietary options (LOE = IIA).

Hearing loss, vertigo, vestibular neuropathy

Recommendation 3.11. It is recommended that primary care clinicians should refer HNC survivors to appropriate specialists (ie, audiologists) for loss of hearing, vertigo, or vestibular neuropathy related to treatment (LOE = IIA).

Sleep disturbance/sleep apnea

Recommendation 3.12. It is recommended that primary care clinicians: a) should screen HNC survivors for sleep disturbance by asking HNC survivors and partners about snoring and symptoms of sleep apnea (LOE = 0); b) should refer HNC survivors to a sleep specialist for a sleep study (polysomnogram) if sleep apnea is suspected (LOE = 0); c) should manage sleep disturbance similar to patients in the general population (LOE = 0); d) should recommend nasal decongestants, nasal strips, and sleeping in the propped-up position to reduce snoring and mouth-breathing; room cool-mist humidifiers can aid sleep as well by keeping the airway moist (LOE = 0); e) should refer to a dental professional to test the fit of dentures to ensure proper fit and counsel HNC survivors to remove dentures at night to avoid irritation (LOE = 0).

Speech/voice

Recommendation 3.13. It is recommended that primary care clinicians: a) should assess HNC survivors for speech disturbance (LOE = 0); b) should refer HNC survivors to an experienced speech-language pathologist if communication disorder exists (LOE = IA, IIA).

Hypothyroidism

Recommendation 3.14. It is recommended that primary care clinicians should evaluate HNC survivor thyroid function by measuring TSH every 6–12 mo (LOE = III).

Oral and dental surveillance

Recommendation 3.15. It is recommended that primary care clinicians: a) should counsel HNC survivors to maintain close follow-up with the dental professional and reiterate that proper preventive care can help reduce caries and gingival disease (LOE = IA); b) should counsel HNC survivors to avoid tobacco, alcohol (including mouthwash containing alcohol), spicy or abrasive foods, extreme temperature liquids, sugar-containing chewing gum or sugary soft drinks, and acidic or citric liquids (LOE = 0); c) should refer HNC survivors to a dental professional specializing in the care of oncology patients (LOE = 0).

Caries

Recommendation 3.16. It is recommended that primary care clinicians: a) should counsel HNC survivors to seek regular professional dental care for routine examination and cleaning and immediate attention to any intraoral changes that may occur (LOE = 0); b) should counsel HNC survivors to minimize intake of sticky and/or sugar-containing food and drink to minimize risk of caries (LOE = 0); c) should counsel HNC survivors on dental prophylaxis, including brushing with remineralizing toothpaste, the use of dental floss, and fluoride use (prescription 1.1% sodium fluoride toothpaste as a dentifrice or in customized delivery trays; LOE = IA, 0).

Periodontitis

Recommendation 3.17. It is recommended that primary care clinicians: a) should refer HNC survivors to a dentist or periodontist for thorough evaluation (LOE = 0); b) should counsel HNC survivors to seek regular treatment from and follow recommendations of a qualified dental professional and reinforce that proper examination of the gingival attachment is a normal part of ongoing dental care (LOE = 0).

Xerostomia

Recommendation 3.18. It is recommended that primary care clinicians: a) should encourage use of alcohol-free rinses if an HNC survivor requires mouth rinses (LOE = 0); b) should counsel HNC survivors to consume a low-sucrose diet and to avoid caffeine, spicy and highly acidic foods, and tobacco (LOE = 0); c) should encourage HNC survivors to avoid dehydration by drinking fluoridated tap water, but explain that consumption of water will not eliminate xerostomia (LOE = 0).

Osteonecrosis

Recommendation 3.19. It is recommended that primary care clinicians: a) should monitor HNC survivors for swelling of the jaw and/or jaw pain, indicating possible osteonecrosis (LOE = 0); b) should administer conservative treatment protocols, such as broad-spectrum antibiotics and daily saline or aqueous chlorhexidine gluconate irrigations, for early stage lesions.(LOE = 0); c) should refer to an HN surgeon for consideration of hyperbaric oxygen therapy for early and intermediate lesions, for debridement of necrotic bone while undergoing conservative management, or for external mandible bony exposure through the skin (LOE = 0).

Oral infections/candidiasis

Recommendation 3.20. It is recommended that primary care clinicians: a) should refer HNC survivors to a qualified dental professional for treatment and management of complicated oral conditions and infections (LOE = 0); b) should consider systemic fluconazole and/or localized therapy of clotrimazole troches to treat oral fungal infections (LOE = 0).

Body and self-image

Recommendation 3.21. It is recommended that primary care clinicians: a) should assess HNC survivors for body and self-image concerns (LOE = IIA); b) should refer for psychosocial care as indicated (LOE = IA).

TABLE 1. *Continued*

Distress/depression/anxiety

Recommendation 3.22. It is recommended that primary care clinicians: a) should assess HNC survivors for distress/depression and/or anxiety periodically (3 mo posttreatment and at least annually), ideally using a validated screening tool (LOE = I); b) should offer in-office counseling and/or pharmacotherapy and/or refer to appropriate psycho-oncology and mental health resources as clinically indicated if signs of distress, depression, or anxiety are present (LOE = I); c) should refer HNC survivors to mental health specialists for specific QoL concerns, such as to social workers for issues like financial and employment challenges or to addiction specialists for substance abuse (LOE = I).

Health promotion

Information

Recommendation 4.1. It is recommended that primary care clinicians: a) should assess the information needs of the HNC survivor related to HNC and its treatment, side effects, other health concerns, and available support services (LOE = 0); b) should provide or refer HNC survivors to appropriate resources to meet identified needs (LOE = 0).

Healthy weight

Recommendation 4.2. It is recommended that primary care clinicians: a) should counsel HNC survivors to achieve and maintain a healthy weight (LOE = III); b) should counsel HNC survivors on nutrition strategies to maintain a healthy weight for those at risk for cachexia (LOE = 0); c) should counsel HNC survivors if overweight or obese to limit consumption of high-calorie foods and beverages and increase physical activity to promote and maintain weight loss (LOE = IA).

Physical activity

Recommendation 4.3. It is recommended that primary care clinicians should counsel HNC survivors to engage in regular physical activity consistent with the ACS guideline, and specifically: a) should avoid inactivity and return to normal daily activities as soon as possible after diagnosis (LOE = III); b) should aim for at least 150 min of moderate or 75 min of vigorous aerobic exercise per week (LOE = I, IA); (c) should include strength training exercises at least 2 d/wk (LOE = IA).

Nutrition

Recommendation 4.4. It is recommended that primary care clinicians: a) should counsel HNC survivors to achieve a dietary pattern that is high in vegetables, fruits, and whole grains, low in saturated fats, sufficient in dietary fiber, and avoids alcohol consumption (LOE = IA, III); b) should refer HNC survivors with nutrition-related challenges (eg, swallowing problems that impact nutrient intake) to a registered dietician or other specialist (LOE = 0).

Tobacco cessation

Recommendation 4.5. It is recommended that primary care clinicians should counsel HNC survivors to avoid tobacco products and offer or refer patients to cessation counseling and resources (LOE = I).

Personal oral health

Recommendation 4.6. It is recommended that primary care clinicians: a) should counsel HNC survivors to maintain regular dental care, including frequent visits to dental professionals, early interventions for dental complications, and meticulous oral hygiene (LOE = 0); b) should test fit dentures to ensure proper fit and counsel HNC survivors to remove them at night to avoid irritation (LOE = 0); c) should counsel HNC survivors that nasal strips can reduce snoring and mouth-breathing and that room humidifiers and nasal saline sprays can aid sleep as well (LOE = 0); d) should train HNC survivors to do at-home HN self-evaluations and be instructed to report any suspicions or concerns immediately (LOE = 0).

Care coordination and practice implications

Survivorship care plan

Recommendation 5.1. It is recommended that primary care clinicians should consult with the oncology team and obtain a treatment summary and survivorship care plan (LOE = 0, III).

Communication with other providers

Recommendation 5.2. It is recommended that primary care clinicians: a) should maintain communication with the oncology team throughout diagnosis, treatment, and posttreatment care to ensure care is evidence-based and well coordinated (LOE = 0); b) should refer HNC survivors to a dentist to provide diagnosis and treatment of dental caries, periodontal disease, and other intraoral conditions, including mucositis and oral infections, and communicate with the dentist on follow-up recommendations and patient education (LOE = 0); c) should maintain communication with specialists referred to for management of comorbidities, symptoms, and long-term and late effects (LOE = 0).

Inclusion of caregivers

Recommendation 5.3. It is recommended that primary care clinicians should encourage the inclusion of caregivers, spouses, or partners in usual HNC survivorship care and support (LOE = 0).

More resources

More resources to support guideline implementation are available at cancer.org/professionals.

ACS indicates American Cancer Society; ASCO, American Society of Clinical Oncology; CBT, cognitive behavioral therapy; GERD, gastroesophageal reflux disease; HN, head and neck; HNC, head and neck cancer; HRQoL, health-related quality of life; LDCT, low-dose computed tomography; LOE, level of evidence; MLD, manual lymphatic drainage; NCCN, National Comprehensive Cancer Network; NCI CTCAE, National Cancer Institute Common Toxicity Criteria for Adverse Events; PPIs, proton pump inhibitors; QoL, quality of life; SAN, spinal accessory nerve; TSH, thyroid-stimulating hormone.

TABLE 2. Level of Evidence

LEVEL OF EVIDENCE	CRITERIA
I	Meta-analyses of RCTs
IA	RCT of HNC survivors
IB	RCT based on cancer survivors across multiple cancer sites
IC	RCT not based on cancer survivors but on general population experiencing a specific long-term or late effect (eg, managing fatigue, etc)
IIA	Non-RCTs based on HNC survivors
IIB	Non-RCTs based on cancer survivors across multiple sites
IIC	Non-RCTs not based on cancer survivors but on general population experiencing a specific long-term or late effect (eg, managing fatigue, etc)
III	Case-control study or prospective cohort study
0	Expert opinion, observational study (excluding case-control and prospective cohort studies), clinical practice, literature review, or pilot study
2A	NCCN Category 2A: Based upon lower-level evidence, there is uniform NCCN consensus that the intervention is appropriate

HNC indicates head and neck cancer; NCCN, National Comprehensive Cancer Network; RCTs, randomized controlled trials.

of the members of the panel did not disclose any such relationships.

Results

Of the total number of 2081 articles identified by the search, 349 (see Supporting Information Table 1) met inclusion criteria; and, after full text review, 184 were included as the evidence base. Less than 2% of eligible articles were rated as level I evidence, less than 4% were rated as level IA evidence, less than 1% were rated as level IC evidence, and less than 3% were rated as level IIA evidence. The majority of evidence was rated as level III (28%) and level 0 (64%). Recommendations provided in this guideline are based on current evidence in the literature and expert consensus opinion. Clinical interpretation of the included evidence follows each recommendation, along with a rating of the level of evidence (LOE) supporting each recommendation. Recommendations provided in this guideline are based on current evidence in the literature, but most evidence is not sufficient to warrant a strong, evidence-based recommendation. Rather, recommendations should be largely viewed as possible management strategies given the current evidence base and the logistical challenges of comprehensively adhering to these recommendations.

Recommendations

Surveillance for HNC Recurrence

See Table 3: Recommendations for Surveillance for Head and Neck Cancer Recurrence.

History and physical

Recommendation 1.1. It is recommended that primary care clinicians: a) should individualize clinical follow-up care provided to HNC survivors based on age, specific diagnosis, and treatment protocol as recommended by the treating oncology team (LOE = 2A); b) should conduct a detailed cancer-related history and physical examination every 1 to 3 months for the first year after primary treatment, every 2 to 6 months in the second year, every 4 to 8 months in years 3 through 5, and annually after 5 years (LOE = 2A);[10] and c) should confirm continued follow-up with an otolaryngologist or HNC specialist for head and neck (HN)-focused examination (LOE = 2A).

Clinical interpretation. Surveillance for HNC recurrence (locally, regionally in the neck, or distant metastasis) and second primary HNC, as well as SPCs in other high-risk sites (lung, esophagus), is an essential component of evaluation.[23] Physical examination of the HN should include (direct) nasopharyngolaryngoscopy by an otolaryngologist or HNC specialist of the entire upper aerodigestive tract (oral cavity, oropharynx, hypopharynx, and larynx) and palpation of the neck. Posttreatment baseline imaging of the primary site and regional lymph node basins is recommended within 6 months of the initial treatment and is within the purview of the treating team. NCCN recommends baseline imaging in T3/T4 or N2/N3 disease for oropharyngeal, hypopharyngeal, glottic, supraglottic, and nasopharyngeal cancers. Routine reimaging is not recommended in the absence of any clinical symptoms and sign of recurrence.

Outcome for recurrent HNC is very poor, with the notable exception of those whose HNC was early stage and those

TABLE 3. Guideline for Surveillance for Head and Neck Cancer Recurrence

RECOMMENDATION	LEVEL OF EVIDENCE[a,b]
It is recommended that primary care clinicians:	
1.1. History and physical	2A[a] (H&P), 0[b] (education)
a) Should individualize clinical follow-up care provided to HNC survivors based on age, specific diagnosis, and treatment protocol as recommended by the treating oncology team	
b) Should conduct a detailed cancer-related history and physical examination every 1–3 mo for the first y after primary treatment, every 2–6 mo in the second y, every 4–8 mo in y 3–5, and annually after 5 y[10]	
c) Should confirm continued follow-up with otolaryngologist or HNC specialist for HN-focused examination	
1.2. Surveillance education	
a) Should educate and counsel all HNC survivors about the signs and symptoms of local recurrence	
b) Should refer HNC survivors to an HNC specialist if signs and symptoms of local recurrence are present	

H&P indicates history and physical; HN, head and neck; HNC, head and neck cancer. [a]National Comprehensive Cancer Network Category 2A: Based upon lower-level evidence, there is uniform NCCN consensus that the intervention is appropriate. Reproduced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines) for Head and Neck Cancers V.1.2015. © 2015 National Comprehensive Cancer Network, Inc. All rights reserved. The NCCN Guidelines and illustrations herein may not be reproduced in any form for any purpose without the express written permission of the NCCN. To view the most recent and complete version of the NCCN Guidelines, go online to NCCN.org. NATIONAL COMPREHENSIVE CANCER NETWORK, NCCN, NCCN GUIDELINES, and all other NCCN content are trademarks owned by the National Comprehensive Cancer Network, Inc. [b]Level of evidence: I, meta-analyses of randomized controlled trials (RCTs); IA, RCT of HNC survivors; IB, RCT based on cancer survivors across multiple sites; IC, RCT based not on cancer survivors but on the general population experiencing a specific long-term or late effect (eg, managing fatigue, etc); IIA, non-RCT based on HNC survivors; IIB, non-RCT based on cancer survivors across multiple sites; IIC,non-RCT not based on cancer survivors but on the general population experiencing a specific long-term or late effect (eg, managing fatigue, etc); III, casecontrol or prospective cohort study; 0, expert opinion, observation, clinical practice, literature review, or pilot study.

with local only recurrence. Hence, salvage therapy for recurrent disease may preferentially benefit this subset.[24]

The literature is not definitive on the optimal frequency of surveillance, and it is unclear whether surveillance provides any survival advantage.[25] However, NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for HNC provide a schedule for follow-up evaluation (see Recommendation 1.1).[10] Primary care clinician monitoring is important, because one large study showed diminishing frequency of follow-up by oncologists over time.[25]

Surveillance education

Recommendation 1.2. It is recommended that primary care clinicians: a) should educate and counsel all HNC survivors about the signs and symptoms of local recurrence (LOE = 0); and b) should refer HNC survivors to an HNC specialist if signs and symptoms of local recurrence are present (LOE = 0).

Clinical interpretation. Primary care clinicians should educate and counsel patients about the signs and symptoms of recurrence, including swelling anywhere in the HN or in an area that does not heal; red or white patch in the mouth; lumps, bumps or masses; persistent sore throat; foul oral cavity odor independent of hygiene practices; persistent nasal obstruction or congestion; frequent nose bleeds; unusual discharge from the nose; difficulty breathing; double vision; numbness/weakness; ear or jaw pain; difficulty chewing, swallowing, or moving the jaw or tongue; blood in saliva or phlegm; loose teeth; ill-fitting dentures; and unexplained weight loss and/or fatigue (cancer.net/cancer-types/head-and-neck-cancer/symptoms-and-signs; accessed January 29, 2016). Patients may present with these symptoms, and the primary care clinician should ask about them during routine office visits. If these symptoms are present, refer to an HNC specialist. Evaluation of patient-reported symptoms thorough HN upper aerodigestive tract examination, including flexible nasopharyngolaryngoscopy, is essential in detecting a recurrence as early as possible, which may impact survival.

Screening for SPCs

See Table 4: Recommendations for Screening and Early Detection of Second Primary Cancers.

Recommendation 2.1. It is recommended that primary care clinicians: a) should screen HNC survivors for other cancers as they would patients in the general population by adhering to the ACS Early Detection Recommendations (cancer.org/professionals; LOE = 0); b) should screen HNC survivors for lung cancer according to ASCO or NCCN[14] recommendations for annual lung cancer screening with low-dose computed tomography (LDCT) for high-risk patients based on smoking history (LOE = 2A); and c) should screen HNC survivors for another HNC and esophageal cancer as they would for patients of increased risk (LOE = 0, IIA).

Clinical interpretation. Approximately 23% of HNC survivors will develop one or multiple SPCs. The sites at highest risk are HN, lung, and esophagus,[26] accounting for 89%

TABLE 4. Guideline for Screening and Early Detection of Second Primary Cancers

RECOMMENDATION	LEVEL OF EVIDENCE[a]
It is recommended that primary care clinicians:	
2.1. Screening and early detection of second primary cancers	0 (screening, other cancers); 2A (screening, lung cancer)[b]; 0, IIA (screening, another HN or esophageal cancer)
a) Should screen HNC survivors for other cancers as they would for patients in the general population by adhering to the ACS Early Detection Recommendations (cancer.org/professionals)	
b) Should screen HNC survivors for lung cancer according to ASCO or NCCN[14] recommendations for annual lung cancer screening with LDCT for high-risk patients based on smoking history	
c) Should screen HNC survivors for another HN and esophageal cancer as they would for patients of increased risk	

ACS indicates American Cancer Society; ASCO, American Society of Clinical Oncology; HN, head and neck; HNC, head and neck cancer; LDCT, low-dose computed tomography; NCCN, National Comprehensive Cancer Network. [a]Level of evidence: I, meta-analyses of randomized controlled trials (RCTs); IA, RCT of HNC survivors; IB, RCT based on cancer survivors across multiple sites; IC, RCT based not on cancer survivors but on the general population experiencing a specific long-term or late effect (eg, managing fatigue, etc); IIA, non-RCT based on HNC survivors; IIB, non-RCT based on cancer survivors across multiple sites; IIC, non-RCT not based on cancer survivors but on the general population experiencing a specific long-term or late effect (eg, managing fatigue, etc); III, case-control or prospective cohort study; 0, expert opinion, observation, clinical practice, literature review, or pilot study. [b]National Comprehensive Cancer Network Category 2A: Based upon lower-level evidence, there is uniform NCCN consensus that the intervention is appropriate. Adapted with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines) for Lung Cancer Screening V.1.2016. © 2015 National Comprehensive Cancer Network, Inc. All rights reserved. The NCCN Guidelines and illustrations herein may not be reproduced in any form for any purpose without the express written permission of the NCCN. To view the most recent and complete version of the NCCN Guidelines, go online to NCCN.org. NATIONAL COMPREHENSIVE CANCER NETWORK, NCCN, NCCN GUIDELINES, and all other NCCN content are trademarks owned by the National Comprehensive Cancer Network, Inc.

of SPCs. Approximately 20% will develop one SPC, 3% will develop two SPCs, and less than 1% will develop three SPCs. The risk of SPC has increased since 1975 for all subsites of the primary HNC with the notable exception of oropharyngeal cancer.[27] Since 1991, there has been a documented increase in incidence of HPV-associated oropharyngeal cancers and a decrease in tobacco-associated oropharyngeal cancers, resulting in a decline in SPC risk for patients with index oropharyngeal cancers.[27] Patients with an index HNC of the hypopharynx and larynx are more likely to develop an SPC in the lung, while those with an index HNC in the oral cavity or oropharynx are more likely to get an SPC in other HN sites.[27,28] HNC survivors with an SPC have a poor prognosis, with a median survival of 12 months after diagnosis of SPC.[29] Early detection and aggressive treatment are strategies that might be used for improving survival.[28]

Among long-term survivors of HNC beyond 3 years, 15% die within 5 years of initial diagnosis, and 41% die within 10 years. The leading causes of death in this group are late recurrence or second primary HNC (29%), non-HN SPC (23%), cardiovascular disease (21%), and other causes (23%).[30]

HN sites are the second most common site of SPC among HNC survivors, accounting for 23% of SPCs.[26] HN SPCs are associated more with oral cavity and non-HPV–related oropharyngeal cancer.[28] When a patient's signs or symptoms raise concerns of potential recurrence or second HN primary cancer, the primary care clinician should refer the patient to the primary treating specialist.

Lung is the most common site of SPC among HNC survivors (33% of all SPCs), particularly in patients with a history of tobacco exposure.[26] Five percent of survivors of HNC will go on to develop a new primary lung cancer.[31] This is three times higher than the cumulative incidence of second primary lung cancers for survivors of lung cancer.[31] Survival in this group is worse than in the overall population of patients with lung cancer. Patients who have hypopharyngeal and laryngeal cancer are at higher risk of developing second primary lung cancer compared with those who have cancer of other HN sites. The National Lung Screening Trial (NLST) showed reduced mortality from lung cancer among current or former heavy smokers ages 55 to 74 years when LDCT scanning of the lungs was used for screening compared with single-view chest x-ray (CXR),[32] suggesting LDCT as the screening modality of choice. A systematic review of the evidence regarding the benefits and harms of lung cancer screening using LDCT indicates that LDCT screening may benefit individuals who meet NLST inclusion criteria and are at an increased risk for lung cancer.[33] However, other well known risk factors for lung cancer, such as tobacco-related HNC, may not meet the NLST inclusion criteria, and patients with these risk factors may benefit from screening. The screening shows benefit in high-volume cancer centers. Due to potential harms from LDCT screening, such as death related to interventions in benign nodules, or deaths related to follow-up procedures, such as bronchoscopy and needle biopsy within 2 months of the screening (3.4% per 10,000 screened by LDCT and 2.2 per 10,000 screened

by CXR), there is uncertainty regarding the generalizability of results.[33]

Current NCCN Guidelines for Lung Cancer Screening[14] recommend LDCT for individuals ages 55 to 74 years who have a history of smoking 30-pack-years or more and are current smokers or have quit smoking within the last 15 years, and for individuals aged 50 years or older who have a history of smoking 20-pack-years or more and one

TABLE 5. Summary of Potential Long-Term and Late Effects of Head and Neck Cancer and its Treatment by Treatment Type

TREATMENT TYPE	LONG-TERM EFFECTS	LATE EFFECTS
Surgery (neck dissection, laryngectomy)	Shoulder function • Shoulder mobility, pain Oral health complications • Xerostomia • Dysphagia • Oral infections Musculoskeletal effects • Trismus • Impaired neck motion, pain • Stricture	• Spinal nerve abnormalities • Lymphedema • Neuropathy • Cervical radiculopathy
Radiation (IMRT, mediastinal RT)	Oropharyngeal • Xerostomia • Dysphagia Neuromuscular • Cervical dystonia • Trismus Musculoskeletal • Shoulder dysfunction Integumentary • Radiation dermatitis Lymphovascular • Lymphedema Oral health complications • Xerostomia • Oral infections	Vision • Premature cataracts Cardiovascular • Carotid obstruction • Baroreceptor failure Oropharyngeal • Xerostomia • Dysphagia • Dysarthria Pulmonary • Pulmonary fibrosis Neuromuscular • Cervical dystonia • Trismus • Brachial plexopathy • Cervical radiculopathy Musculoskeletal • Osteonecrosis Lymphovascular • Lymphedema • Carotid stenosis Sensory complications • Hearing loss • Ocular issues • Altered or loss of taste
Chemotherapy	Neuromuscular • Sensory/motor neuropathy • Sensory ataxia • Gait dysfunction • Vertigo Other effects • Hot flushes/sweats • Weight gain, abdominal obesity • Fatigue/decreased activity • Anemia • Body hair loss • Dry eyes	Neuromuscular • Cardiac abnormality, cardiomyopathy Other • Osteoporosis, fractures • Metabolic syndrome • Cardiovascular disease—possible increased risk of myocardial infarction • Diabetes; decreased sensitivity to insulin and oral glycemic agents • Increased cholesterol • Increased fat mass and decreased lean muscle mass/muscle wasting • Venous thromboembolism • Vertigo • Cognitive dysfunction

TABLE 5. *Continued*

GENERAL PSYCHOSOCIAL LONG-TERM AND LATE EFFECTS
• Depression, depressive symptoms • Distress—multifactorial unpleasant experience of psychological, social, and/or spiritual nature • Worry, anxiety • Fear of recurrence • Pain-related concerns • End-of-life concerns: Death and dying • Changes in sexual function and/or desire • Challenges with body image (secondary to surgery, laryngectomy, radiation) • Challenges with self-image • Relationship and other social role difficulties • Return to work concerns and financial challenges

IMRT indicates intensity-modulated radiation therapy; RT, radiation therapy.

additional risk, such as prior HNC.[14] The NCCN Guidelines recommend chest imaging (computed tomography [CT]) for surveillance of HNC patients as clinically indicated.[10,14] These indications are as defined for lung cancer screening based on smoking history, for HNC patients with smoking history, for those with hypopharyngeal and laryngeal cancer who have a higher risk of second primary lung cancer, and for any HNC patient who continues to smoke tobacco after diagnosis of the index HNC.

The esophagus is the third most common site of SPC[24,26] among HNC survivors and is most commonly associated with oral cavity, oropharyngeal, and hypopharyngeal cancer. The risk of SPC in the esophagus is declining in HNC survivors. Routine surveillance imaging by barium swallow esophagogram or CT scan of the chest for second primary esophageal cancer among HNC survivors is not recommended. In patients who have new onset of esophageal dysphagia symptoms after completion of HNC treatment, esophageal evaluation with esophagoscopy should be performed by an HN surgeon or gastroenterologist. Findings on esophagoscopy in HNC survivors include a 4% prevalence of esophageal carcinoma in addition to peptic esophagitis (63%), stricture (23%), candidiasis (9%), Barrett esophagus (8%), and gastritis (4%).[34]

Assessment and management of physical and psychosocial long-term and late effects of HNC and treatment

Recommendation 3.1. It is recommended that primary care clinicians should assess for long-term and late effects of HNC and its treatment at each follow up visit (LOE = 0) (see Table 5: Summary of Potential Long-Term and Late Effects of HNC and its treatment by Treatment Type).

The risk of physical long-term and late effects after therapy for HNC is determined by several factors, including: a) type of treatment(s), b) duration and dose of treatment(s) (increasing cumulative dose and duration of therapy increases the potential risk), c) specific type of chemotherapy, d) age of patient during treatment, e) location of primary tumor, and f) use of tobacco products. Modalities of treatment include surgery, RT, chemotherapy, and targeted therapy. Primary care clinicians should refer to the patient's cancer treatment summary, if available, for specific drugs and doses (see Recommendation 5.1).

The treatment of HNC often creates both acute and chronic disability. This can manifest in many ways, including dry mouth, dysphagia, sleep difficulty, obstructive sleep apnea (OSA), pain, weight loss, and loss of work.

Pretreatment psychological status and caregiver support play significant roles in the magnitude of distress during and after treatment. It is critical that surveillance of the psychological status from both survivor's and caregiver's perspective be assessed and distress actively managed. In addition, the survivor's financial status, family responsibilities, and support for the survivor impact the patient's posttreatment psychological status.

Table 5 lists potential physical and psychosocial long-term and late effects associated with surgery, radiation and chemotherapy. Long-term effects are medical problems that develop during active treatment and persist after the completion of treatment; whereas late effects are medical problems that develop or become apparent months or years after treatment is completed. Whereas various levels of evidence exist to demonstrate the presence of these effects during survivorship, there is limited information on the time interval to onset or prevalence in the posttreatment phase among survivors. This guideline combines evidence with expert consensus to assist primary care clinicians in managing HNC survivorship. Recommendations for the assessment and management of specific physical and

TABLE 6. Guideline for Assessment and Management of Physical and Psychosocial Long-Term and Late Effects of Head and Neck Cancer and Its Treatment

RECOMMENDATION	LEVEL OF EVIDENCE[a]
It is recommended that primary care clinicians:	
Assessment and management of physical and psychosocial long-term and late effects of HNC and its treatment	
3.1. Assessment and management of effects	0
Should assess for long-term and late effects of HNC and its treatment at each follow-up visit	
Physical effects: Musculoskeletal and neuromuscular	IA
3.2. Spinal accessory nerve palsy	
Should refer HNC survivors with SAN palsy occurring postradical neck dissection to a rehabilitation specialist to improve range of motion and ability to perform daily tasks	
3.3. Cervical dystonia/muscle spasms/neuropathies	0 (assessment, referral), 0 (nerve-stabilizing agents), IIA (injections)
a) Should assess HNC survivors for cervical dystonia, which is characterized by painful dystonic spasms of the cervical muscles and can be caused by neck dissection, radiation, or both	
b) Should refer HNC survivors to a rehabilitation specialist for comprehensive neuromusculoskeletal management if cervical dystonia or neuropathy is found	
c) Should prescribe nerve-stabilizing agents, such as pregabalin, gabapentin, and duloxetine, or refer to a specialist for botulinum toxin type A injections into the affected muscles for pain management and spasm control as indicated (LOE = 0, IIA)	
3.4. Shoulder dysfunction	IIA (assessment); IA (referral)
a) Should conduct baseline assessment of HNC survivor shoulder function posttreatment for strength, ROM, and impingement signs and continue to assess as follow-up for ongoing complications or worsening condition	
b) Should refer HNC survivors to a rehabilitation specialist for improvement to pain, disability, and range of motion where shoulder morbidity exists	
3.5. Trismus	0 (referral); IIA (nerve-stabilizing agents)
a) Should refer HNC survivors to rehabilitation specialists and dental professionals to prevent trismus and to treat trismus as soon as it is diagnosed	
b) Should prescribe nerve-stabilizing agents to combat pain and spasms, which may also ease physical therapy and stretching devices	
Physical effects: General	
3.6. Dysphagia/aspiration/stricture	IIA
a) Should refer HNC survivors presenting with complaints of dysphagia, postprandial cough, unexplained weight loss, and/or pneumonia to an experienced speech-language pathologist for instrumental evaluation of swallowing function to assess and manage dysphagia and possible aspiration	
b) Should recognize potential for psychosocial barriers to swallowing recovery and refer HNC survivors to an appropriate clinician if barriers are present	
c) Should refer to a speech-language pathologist for videofluoroscopy as the first-line test for HNC survivors with suspected stricture due to the high degree of coexisting physiologic dysphagia	
d) Should refer HNC survivors with stricture to a gastroenterologist or head and neck surgeon for esophageal dilation	
3.7. Gastroesophageal reflux disease	IIA
a) Should monitor HNC survivors for developing or worsening GERD, as it prevents healing of irradiated tissues and is associated with increased risk of HNC recurrence or SPC	
b) Should counsel HNC survivors on an increased risk of esophageal cancer and the associated symptoms	
c) Should recommend PPIs or antacids, sleeping with a wedge pillow or 3-inch blocks under the head of the bed, not eating or drinking fluids for 3 h before bedtime, tobacco cessation, and avoidance of alcohol	

TABLE 6. *Continued*

RECOMMENDATION	LEVEL OF EVIDENCE[a]
d) Should refer HNC survivors to a gastroenterologist if symptoms are not relieved by treatments listed in 3.7c.	
3.8. Lymphedema	IIA
a) Should assess HNC survivors for lymphedema using the NCI CTCAE v.4.03, or referral for endoscopic evaluation of mucosal edema of the oropharynx and larynx, tape measurements, sonography, or external photographs	
b) Should refer HNC survivors to a rehabilitation specialist for treatment consisting of MLD and, if tolerated, compressive bandaging	
3.9. Fatigue	0 (assessment); I (referral, physical activity)
a) Should assess for fatigue and treat any causative factors for fatigue, including anemia, thyroid dysfunction, and cardiac dysfunction	
b) Should offer treatment or referral for factors that may impact fatigue (eg, mood disorders, sleep disturbance, pain, etc) for those who do not have an otherwise identifiable cause of fatigue	
c) Should counsel HNC survivors to engage in regular physical activity and refer for CBT as appropriate	
3.10. Altered or loss of taste	IIA
Should refer HNC survivors with altered or loss of taste to a registered dietitian for dietary counseling and assistance in additional seasoning of food, avoiding unpleasant food, and expanding dietary options	
3.11. Hearing loss, vertigo, vestibular neuropathy	IIA
Should refer HNC survivors to appropriate specialists (ie, audiologists) for loss of hearing, vertigo, or vestibular neuropathy related to treatment	
3.12. Sleep disturbance/sleep apnea	0
a) Should screen HNC survivors for sleep disturbance by asking HNC survivors and partners about snoring and symptoms of sleep apnea	
b) Should refer HNC survivors to a sleep specialist for a sleep study (polysomnogram) if sleep apnea is suspected	
c) Should manage sleep disturbance similar to patients in the general population	
d) Should recommend nasal decongestants, nasal strips, and sleeping in the propped-up position to reduce snoring and mouth-breathing; room cool-mist humidifiers can aid sleep as well by keeping the airway moist	
e) Should refer to a dental professional to test the fit of dentures to ensure proper fit and counsel HNC survivors to remove dentures at night to avoid irritation	
3.13. Speech/voice	0 (assessment); IA, IIA (referral)
a) Should assess HNC survivors for speech disturbance	
b) Should refer HNC survivors to an experienced speech-language pathologist if communication disorder exists	
3.14. Hypothyroidism	III
Should evaluate HNC survivor thyroid function by measuring TSH every 6–12 mo	
Physical effects: Oral health	
3.15. Oral and dental surveillance	IA (follow-up with dental professional), 0 (avoid specific foods; referral)
a) Should counsel HNC survivors to maintain close follow-up with the dental professional and reiterate that proper preventive care can help reduce caries and gingival disease	
b) Should counsel HNC survivors to avoid tobacco, alcohol (including mouthwash containing alcohol), spicy or abrasive foods, extreme temperature liquids, sugar-containing chewing gum or sugary soft drinks, and acidic or citric liquids	
c) Should refer HNC survivors to a dental professional specializing in the care of oncology patients	
3.16. Caries	0 (regular professional dental care; minimize specific foods), IA, 0 (dental prophylaxis)

TABLE 6. *Continued*

RECOMMENDATION	LEVEL OF EVIDENCE[a]
a) Should counsel HNC survivors to seek regular professional dental care for routine examination and cleaning, and immediate attention to any intraoral changes that may occur b) Should counsel HNC survivors to minimize intake of sticky and/or sugar-containing food and drink to minimize risk of caries c) Should counsel HNC survivors on dental prophylaxis, including brushing with remineralizing toothpaste, the use of dental floss, and fluoride use (prescription 1.1% sodium fluoride toothpaste as a dentifrice or in customized delivery trays)	
3.17. Periodontitis	0
a) Should refer HNC survivors to a dentist or periodontist for thorough evaluation	
b) Should counsel HNC survivors to seek regular treatment from and follow recommendations of a qualified dental professional and reinforce that proper examination of the gingival attachment is a normal part of ongoing dental care	
3.18. Xerostomia	0
a) Should encourage use of alcohol-free rinses if an HNC survivor requires mouth rinses	
b) Should counsel HNC survivors to consume a low-sucrose diet, avoid caffeine, spicy and highly acidic foods, and tobacco c) Should encourage HNC survivors to avoid dehydration by drinking fluoridated tap water, but explain that consumption of water will not eliminate xerostomia	
3.19. Osteonecrosis	0
a) Should monitor HNC survivors for swelling of the jaw and/or jaw pain, indicating possible osteonecrosis	
b) Should administer conservative treatment protocols, such as broad-spectrum antibiotics and daily saline or aqueous chlorhexidine gluconate irrigations, for early stage lesions	
c) Should refer to a head and neck surgeon for consideration of hyperbaric oxygen therapy for early and intermediate lesions, for debridement of necrotic bone while undergoing conservative management, or for external mandible bony exposure through the skin	
3.20. Oral infections/candidiasis	0
a) Should refer HNC survivors to a qualified dental professional for treatment and management of complicated oral conditions and infections	
b) Should consider systemic fluconazole and/or localized therapy of clotrimazole troches to treat oral fungal infections	
Psychosocial effects	
3.21. Body and self-image	IIA (assessment), IA (referral)
a) Should assess HNC survivors for body and self-image concerns	
b) Should refer for psychosocial care as indicated	
3.22. Distress/depression/anxiety	I
a) Should assess HNC survivors for distress/depression and/or anxiety periodically (3 mo posttreatment and at least annually) ideally using a validated screening tool	
b) Should offer in-office counseling and/or pharmacotherapy and/or refer to appropriate psycho-oncology and mental health resources as clinically indicated if signs of distress, depression, or anxiety are present	
c) Should refer HNC survivors to mental health specialists for specific QoL concerns, such as to social workers for issues like financial and employment challenges or to addiction specialists for substance abuse	

CBT indicates cognitive behavioral therapy; GERD, gastroesophageal reflux disease; HNC, head and neck cancer; LOE, level of evidence; MLD, manual lymphatic drainage; NCI CTCAE, National Cancer Institute Common Toxicity Criteria for Adverse Events; PPIs, proton pump inhibitors; QoL, quality of life; ROM, range of motion; SAN, spinal accessory nerve; SPC, second primary cancer; TSH, thyroid-stimulating hormone. [a]Level of evidence: I, meta-analyses of randomized controlled trials (RCTs); IA, RCT of HNC survivors; IB, RCT based on cancer survivors across multiple sites; IC, RCT based not on cancer survivors but on the general population experiencing a specific long-term or late effect (eg, managing fatigue, etc); IIA, non-RCT based on HNC survivors; IIB, non-RCT based on cancer survivors across multiple sites; IIC, non-RCT not based on cancer survivors but on the general population experiencing a specific long-term or late effect (eg, managing fatigue, etc); III, case-control or prospective cohort study; 0, expert opinion, observation, clinical practice, literature review, or pilot study.

psychosocial long-term and late effects most commonly experienced by HNC survivors are detailed in Table 6 (Guideline for Assessment and Management of Physical and Psychosocial Long-Term and Late Effects of HNC and Its Treatment).

Physical Effects: Musculoskeletal and Neuromuscular

Spinal accessory nerve palsy

Recommendation 3.2. It is recommended that primary care clinicians should refer HNC survivors with spinal accessory nerve (SAN) palsy occurring after radical neck dissection (RND) to a rehabilitation specialist to improve range of motion (ROM) and ability to perform daily tasks (LOE = IA).

Clinical interpretation. While the overall incidence of injury is unknown, damage to the SAN and subsequent perturbation of shoulder motion is a major cause of shoulder dysfunction and pain in HNC survivors, especially in those undergoing neck dissection. Preservation of the SAN during modified RND (MRND) has been associated with improved shoulder function.[35] One study demonstrated denervation and neurogenic compromise of the SAN at 4 to 6 months postoperatively in all groups of patients who underwent neck dissection including RND, MRND, and selective neck dissection (SND).[36] Electromyographic activity of the upper trapezius and middle trapezius is significantly decreased compared with the unaffected side in patients who have undergone neck dissection. Upper limb dysfunction reportedly was mild in 54% of patients, moderate in 15%, and severe in 8%, whereas only 23% reported no issues.[37]

Patients with SAN dysfunction should be referred to a rehabilitation specialist to strengthen the affected shoulder girdle muscles, to improve or maintain ROM, and to improve overall function. Patients with impaired ability to perform activities of daily living should be referred to a rehabilitation specialist. Patients with a more complex clinical situation, who face diagnostic challenges regarding shoulder and neck pain or who fail physical or occupational therapy, should be referred to a physical medicine and rehabilitation physician for expert assessment.

Cervical dystonia/muscle spasms/neuropathies

Recommendation 3.3. It is recommended that primary care clinicians: a) should assess HNC survivors for cervical dystonia, which is characterized by painful dystonic spasms of the cervical muscles and can be caused by neck dissection, radiation, or both (LOE = 0); b) should refer HNC survivors for comprehensive neuromusculoskeletal management if cervical dystonia or neuropathy is found; this may include referral to a rehabilitation specialist (LOE = 0); and c) should prescribe nerve-stabilizing agents, such as pregabalin, gabapentin, and duloxetine, or refer to a specialist for botulinum toxin type A (BTX-A) injections into the affected muscles for pain management and spasm control as indicated (LOE = 0, IIA).

Clinical interpretation. Painful dystonic spasms of the cervical muscles may be present in some HNC survivors. The sternocleidomastoid (if preserved), scalene, and trapezius muscles are most often involved. This painful condition is best termed cervical dystonia, but it differs clinically and pathophysiologically from the cervical dystonia that results from central nervous system disorders and degenerative conditions, in that the dystonic activity after HNC treatment is often progressive, which is in contrast to idiopathic and other central nervous system-mediated cervical dystonias and thus may be amenable to treatment options aimed at stretching and strengthening muscles and stabilizing neuromuscular units through targeted physical modalities. There are no standardized diagnostic criteria for post-HNC acquired cervical dystonia, but symptoms typically involve more than one of the following: rotation of the neck, elevation of a shoulder, repetitive flexion of the neck, pain that is worse with stress, and relief of symptoms through sensory "tricks," such as touching the chin. Cervical dystonia in HNC patients can result from neck dissection that disrupts the cervical anatomy and damages the cervical plexus and nerve roots. Subsequent uncontrolled ectopic activity in these neural structures causes painful spasms in the muscles they innervate. The condition may worsen as scarring progresses. Radiation to the neck can cause progressive fibrosis of the nerve roots and plexus as well as any peripheral nerves and muscles in the radiation field, with adverse effects on these structures that further exacerbate propensity for painful spasm. The effect of spasm and progressive radiation fibrosis can lead to severe neck contracture. Radiation fibrosis syndrome is the clinical manifestation of progressive tissue fibrosis that results from radiation.[38]

Radiation treatment techniques can impact the risk of side effects. A prospective, randomized study comparing the outcomes and toxicities of intensity-modulated RT (IMRT) versus conventional 2-dimensional RT for the treatment of nasopharyngeal carcinoma reported the percentage of patients with neck fibrosis as 2.3% after IMRT and 11.3% after conventional 2-dimensional RT.[39] The mean follow-up was 42 months (range, 1-83 months). Another study evaluating late toxicity after conventional radiation in nasopharyngeal carcinoma found that 169 of 771 patients (22%) had neck fibrosis.[40] No definitive diagnostic criteria are available for the diagnosis of neck fibrosis, making it difficult to accurately ascertain incidence rates.

The primary treatment modality for acquired cervical dystonia requires a comprehensive musculoskeletal approach emphasizing neuromuscular reeducation, proprioceptive retraining, myofascial release, lymphedema management, and restoration of ROM. As such, treatment often must involve a multidisciplinary team, which may include physiatry, physical therapy, occupational therapy, and speech-language pathology. Nerve-stabilizing agents, such as pregabalin, gabapentin,[41] and duloxetine, may be added to control neuropathic pain and spasm. Opioids may be necessary for acute flares of pain in severe cases.[38,42]

Botulinum toxin has both analgesic and muscle-relaxing properties.[43] While several formulations of botulinum toxin are approved by the US Food and Drug Administration for the treatment of cervical dystonia, there are few data on the use of botulinum toxin to treat radiation-induced cervical dystonia or cervical dystonia associated with neck dissection. BTX-A has demonstrated efficacy in treating radiation-induced cervical dystonia in HNC patients in a small retrospective study.[44] A smaller retrospective review demonstrated improvement of cervical disability scores in six HNC patients who were injected with BTX-A into the sternocleidomastoid muscle and three patients who were injected into the pectoralis major pedicle flap.[45] Another small study demonstrated the efficacy of BTX-A infiltration in alleviating muscle spasms in pectoralis major flaps after reconstruction of HNC patients.[46] BTX-A may also be useful in alleviating the neuropathic pain associated with neck dissection in HNC patients.[47]

Shoulder dysfunction

Recommendation 3.4. It is recommended that primary care clinicians: a) should conduct baseline assessment of HNC survivor shoulder function posttreatment to assess for strength, ROM, and impingement signs and continue to assess as follow-up for ongoing complications or worsening condition (LOE = IIA); and b) should refer HNC survivors to a rehabilitation specialist for improvement to pain, disability, and ROM where shoulder morbidity exists (LOE = IA).

Clinical interpretation. Shoulder pain and dysfunction are present in as many as 70% of patients after neck dissection.[48] While there are many contributing factors to shoulder pain and dysfunction, the primary cause is likely damage to the SAN from neck dissection. Perturbation of shoulder motion from weakness of the trapezius and other denervated shoulder girdle muscles can lead to rotator cuff tendonitis, adhesive capsulitis, myofascial pain, and more.[49] RT can also damage the SAN and other neuromuscular structures. The clinical manifestations of radiation fibrosis syndrome may take months or years to develop.[38] Primary care clinicians should assess shoulder function by a directed history and physical examination after HNC treatment and continue to assess patients for emerging pain or functional impairment.

HNC survivors with shoulder pain and dysfunction should be referred to a rehabilitation specialist familiar with this complex patient population. Progressive resistance training (PRT) for HNC patients with SAN neurapraxia/neurectomy-related shoulder dysfunction seemed to be better than standard physical therapy in a small RCT in terms of improving active shoulder external rotation, shoulder pain, and overall scores for shoulder pain and disability.[50] HNC survivors with SAN damage and shoulder dysfunction who underwent a PRT program had significantly reduced shoulder pain and disability as well as improved upper extremity muscular strength and endurance compared with those who underwent a standardized therapeutic exercise protocol.[51] A Cochrane review concluded that there was limited evidence that PRT is more effective than standard physical therapy for shoulder dysfunction in patients treated for HNC in terms of improving pain, disability, and ROM at the shoulder joint, but there was not sufficient evidence to conclude that quality of life (QoL) is improved.[50-53]

In addition to strengthening programs, restrictions like adhesive capsulitis may need to be addressed with further medical intervention. Although there are no specific recommendations for shoulder dysfunction in the HNC population, recommendations for shoulder dysfunction from the general population may include an intraarticular corticosteroid injection for pain modulation, capsular distension under ultrasound or fluoroscopic guidance, or 3-quadrant ultrasound to deep heat collagen structures.[54,55] For patients who completed HNC treatment relatively recently, sonographic heating of the shoulder should only be done with medical supervision because of the theoretical chance of tumor spread due to increased blood flow brought on by heating. For impairments like myofascial pain, trigger-point injections may be beneficial in reducing focal dystonia and pain.[56]

Trismus

Recommendation 3.5. It is recommended that primary care clinicians: a) should refer HNC survivors to rehabilitation specialists and dental professionals to prevent trismus and to treat trismus as soon as it is diagnosed (LOE = 0); and b) should prescribe nerve-stabilizing agents to combat pain and spasms, which may also ease physical therapy and stretching devices (LOE = IIA).

Clinical interpretation. Trismus is defined as the inability to fully open the mouth. Quantitatively, a $\leq$35 mm maximum interincisal distance (MID) cutoff point for defining trismus has a sensitivity of 0.71 and a specificity of 0.98.[57] Other studies have validated the $\leq$35 mm cutoff point for defining trismus.[58] The 3-finger test is a quick clinical

surrogate (where trismus is suspected in any patient who cannot place 3 vertically stacked fingers between the incisors).

Trismus is a common complication of the treatment of HNC especially in patients with oral and oropharyngeal cancers and has a deleterious impact on QoL in this population.[59] Patients with trismus may have difficulty with eating, speaking, maintaining oral hygiene, being examined for cancer recurrence, engaging in oral intimacy, and a variety of other important aspects of daily life. One study found the incidence of trismus for multiple types of HNC was 9% pretreatment and 28% 1-year posttreatment when defined as $\leq$35 mm.[60] The highest prevalence of trismus (38%) was observed 6 months after treatment. Patients with tonsillar tumors were most likely to develop trismus.[60] Another study demonstrated that about half of patients who underwent primary treatment for oral or oropharyngeal cancer developed trismus (MID <35 mm) and reported problems opening the mouth, dental occlusion, problems eating and/or drinking, dry mouth, voice problems, or speech problems.[61] Trismus in patients treated for oral and oropharyngeal cancer is strongly associated with clinical T-classification (tumor in situ [Tis]/T1-T2, 35 mm; T3-T4, 24 mm), RT (no, 30 mm; yes, 27 mm), and type of primary surgery (primary closure, 38 mm; soft tissue flaps, 30 mm; composite flaps, 24 mm).[62]

Physical therapy is often primary treatment for trismus; however, trismus because of HNC is difficult to treat with physical therapy alone.[63] A combination of physical therapy and stretching with a jaw motion rehabilitation appliance has been shown to slow progression of trismus in patients with nasopharyngeal carcinoma after RT.[64] Other splinting devices have also shown promise in reducing trismus.[44]

Nerve-stabilizing agents, such as pregabalin, gabapentin, and duloxetine, may be helpful in treating neuropathic pain and spasm associated with radiation-induced trismus. Gabapentin demonstrated benefit in an RCT, and pentoxifyline improved jaw opening by 4.5 mm in a non-RCT,[65] although pain was not an outcome measure in that study. BTX-A showed benefit in reducing pain, but not in improving jaw opening,[66] as an adjunctive treatment for select neuromuscular and musculoskeletal complications of radiation fibrosis syndrome related to cancer treatment, including trismus, in a small retrospective case series.[38] Referral to a rehabilitation specialist for medication management or botulinum toxin injection may be helpful.

Physical Effects: General

Dysphagia/aspiration/stricture

Recommendation 3.6. It is recommended that primary care clinicians: a) should refer HNC survivors presenting with complaints of dysphagia, postprandial cough, unexplained weight loss, and/or pneumonia to an experienced speech-language pathologist for instrumental evaluation of swallowing function to assess and manage dysphagia and possible aspiration (LOE = IIA); b) should recognize potential for psychosocial barriers to swallowing recovery and refer HNC survivors to an appropriate clinician if barriers are present (LOE = IIA); c) should refer to a speech-language pathologist for videofluoroscopy as the first-line test for HNC survivors with suspected stricture because of the high degree of coexisting physiologic dysphagia (LOE = IIA); and d) should refer HNC survivors with stricture to a gastroenterologist or HN surgeon for esophageal dilation (LOE = IIA).

Clinical interpretation. Persistent or chronic dysphagia in HNC survivorship is a challenging clinical problem. The type, severity, and risk of dysphagia vary, depending on the site of HNC and the treatment regimen. Chronic dysphagia is relatively infrequent in patients who were treated with small-field radiation or single-modality surgery for early stage (T1-T2 N0) HNC but is frequently encountered after multimodality treatment for advanced-stage HNC. Even in modern practice with highly conformal RT (eg, intensity-modulated RT [IMRT]) and less invasive surgical techniques (eg, transoral surgery), it is estimated that almost half of patients treated with multimodality therapy for locoregionally advanced-stage disease suffer some degree of chronic dysphagia.[67] Psychosocial factors, such as depression, cognitive impairment, and lack of caregiver support, and sensory changes, such as altered taste or mucosal pain, may also interfere with oral intake in HNC survivorship. Persistent dysphagia is not fully reversible, but functional gains can be achieved with appropriate swallowing therapy.[68-70] Swallowing therapy may include or combine compensations, exercise, biofeedback, and/or esophageal dilation. Evaluation procedures to allocate appropriate therapies are detailed below.

Dysphagia in HNC survivors is most commonly characterized by inefficiency moving a solid food bolus through the mouth or pharynx; however, in more severe cases, it may result in chronic aspiration. Aspiration typically occurs when drinking liquids. Primary care clinicians should be alert to a high risk of subclinical ("silent") aspiration. More than 50% of chronic aspirators after HNC treatment do so silently with no outward cough or symptom of airway entry.[71-73] Silent aspiration is only detected and effectively treated using instrumental swallowing studies (eg, the videofluoroscopic swallow study—also known as the modified barium swallow or the fiberoptic endoscopic evaluation of swallow). Aspiration detected on instrumental testing is an independent predictor of pneumonia in cancer survivorship[74] and can be lessened with training in individualized (typically straightforward) compensatory techniques by a

speech-language pathologist. On the basis of numerous level IIA studies, it is recommended that patients presenting with complaints of dysphagia, postprandial cough, unexplained weight loss, and/or pneumonia be referred to an experienced speech-language pathologist for instrumental evaluation of swallowing function to assess and manage dysphagia and possible aspiration. Early recognition and referral is recommended.[75-77] The time posttreatment is a significant, negative predictor of response to swallowing therapy, with particularly disappointing response to therapy for survivors who start therapy 2 years or more after treatment of their index HNC. If no speech-language pathologist is available, refer to an HN surgeon for evaluation and therapeutic referrals. Sudden-onset or rapidly progressing dysphagia may be a symptom of locoregional tumor recurrence or second primary HNC; primary care clinicians should refer these HNC survivors to the HN surgeon to rule out new disease.

Risk of stricture (structural narrowing) of the pharynx and/or esophagus occurs in 7% of patients treated with HN RT based on a pooled analysis of over 4700 patients treated with a variety of RT techniques using single or multimodality treatment regimens for HNC. Higher risk groups include those treated with IMRT who had a 16% risk of stricture in the meta-analysis, perhaps explained by differences in dose distributions at the esophageal inlet.[78] Risk of stricture is also higher among patients treated with total laryngectomy (19%).[79] Most treatment-related strictures are effectively managed by esophageal dilation. Serial dilation is often required for long-term management. Solid food dysphagia, difficulty belching/vomiting, and pharyngeal sticking are common symptoms of patients with stricture. Based on numerous level IIA studies, it is recommended that patients with stricture be referred to a gastroenterologist or HN surgeon for esophageal dilation.

Gastroesophageal reflux disease

Recommendation 3.7. It is recommended that primary care clinicians: a) should monitor HNC survivors for developing or worsening gastroesophageal reflux disease (GERD), as it prevents healing of irradiated tissues and is associated with increased risk of HNC recurrence or SPC (LOE = IIA); b) should counsel HNC survivors on an increased risk of esophageal cancer and the associated symptoms (LOE = IIA); c) should recommend proton pump inhibitors or antacids, sleeping with a wedge pillow or 3-inch blocks under the head of the bed, not eating or drinking fluids for 3 hours before bedtime, tobacco cessation, and avoidance of alcohol (LOE = IIA); and d) should refer HNC survivors to a gastroenterologist if symptoms are not relieved by the treatments listed in Recommendation 3.7c (LOE = IIA).

Clinical interpretation. Gastroesophageal reflux is very common in HNC survivors. With compromise of the airway from treatment modalities, strictures of the hypopharynx, dysphagia with silent or apparent aspiration, and swelling of the aerodigestive anatomy, reflux during the daytime or sleep can worsen these already challenging problems. Chronic reflux can also injure the teeth by damaging the enamel. If symptoms of reflux are present or persist despite common treatments, endoscopy by a gastroenterologist might be indicated.

Lymphedema

Recommendation 3.8. It is recommended that primary care clinicians: a) should assess HNC survivors for lymphedema using the National Cancer Institute's Common Toxicity Criteria for Adverse Events (NCI CTCAE) v.4.03 or refer for endoscopic evaluation of mucosal edema of the oropharynx and larynx, tape measurements, sonography, or external photographs (LOE = IIA); and b) should refer HNC survivors to a rehabilitation specialist for treatment consisting of manual lymphatic drainage (MLD) and, if tolerated, compressive bandaging (LOE = IIA).

Clinical interpretation. Secondary lymphedema is a common late effect of the treatment of HNC, but it is sometimes seen acutely after surgery or RT. Lymphedema in HNC survivors may be underdiagnosed because of the subclinical nature of edema, because it may not be as obvious as extremity edema and may develop as a late effect both externally (face, neck, chest) or internally (larynx, pharynx, oral cavity). Lymphedema not only has adverse cosmetic and psychosocial consequences, but can cause pain, musculoskeletal and neurologic dysfunction, infections, breathing or swallowing difficulties, or a variety of other profound sequelae.[80]

There have been few studies to determine the prevalence of HN lymphedema in HNC patients. In one study of 81 HNC patients, 75.3% (61 of 81 patients) were found to have some form of late-effect, secondary lymphedema. Of those, 9.8% (6 of 61 patients) had isolated internal lymphedema (IL), 39.4% (24 of 61 patients) had isolated external lymphedema (EL), and 50.8% (31 of 61 patients) had combined EL/IL.[81]

The severity of IL and EL in HNC patients has been found to be associated with physical and psychosocial symptoms.[82] Patients with more severe EL are more likely to have decreased neck rotation.[82] The more severe combined EL/IL is associated with hearing impairment and decreased QoL.[82] Several factors were found to be significantly associated with the presence of secondary EL and IL in HNC patients, including the following: 1) tumor location (pharyngeal sites were worse than other sites) was associated with EL and combined EL/IL; 2) a longer time

since the end of HNC treatment was associated with EL and combined EL/IL; 3) a higher total RT dose was associated with the presence of combined EL/IL; 4) radiation status of the surgical bed (surgery alone was associated with lower risk and was better than surgery with postoperative radiation and [salvage] surgery in the irradiated field) was associated with the presence of IL, including surgery with postoperative radiation and salvage surgery in the irradiated field; and 5) the greater number of treatment modalities used was associated with EL, IL, and combined EL/IL.[83] Days of radiation were also associated with the presence of combined EL/IL.

There are no standard diagnostic criteria for HN lymphedema in HNC patients, making it challenging to diagnose. Methods that have been used include: a) the NCI CTCAE, V 4.03, b) endoscopic evaluation of mucosal edema of the oropharynx and larynx, c) tape measurements, d) sonography, and e) external photographs.[80] Primary care clinicians unfamiliar or uncomfortable with these methods of diagnosis should consider referral to a rehabilitation specialist or HN surgeon.

There are no trials demonstrating the efficacy of isolated MLD in the management of lymphedema of the HN in HNC patients. Despite this, MLD remains the standard of care. One trial has demonstrated the efficacy of sequential therapy of MLD and compression garments, with patients learning how to perform MLD and using stretches as a part of their therapy.[84] A large cohort study of 700 HNC survivors suggests that 60% respond[85] to complete decongestive therapy combining MLD and compression, with no significant adverse events. Compression garments, however, can be poorly tolerated, and customization may be required for routine use.[80]

Fatigue

Where appropriate, these recommendations build upon the ASCO guideline for screening, assessment, and treatment of cancer-related fatigue (CRF) among adult cancer survivors.

Recommendation 3.9. It is recommended that primary care clinicians: a) should assess for fatigue and treat any causative factors for fatigue, including anemia, thyroid dysfunction, and cardiac dysfunction (LOE = 0); b) should offer treatment or referral for factors that may impact fatigue (eg, mood disorders, sleep disturbance, pain, etc) for those who do not have an otherwise identifiable cause of fatigue (LOE = I); and c) should counsel HNC survivors to engage in regular physical activity and refer for cognitive behavioral therapy (CBT) as appropriate (LOE = I).

Clinical interpretation. CRF is very common among those treated for cancer, especially those who undergo treatment with RT and chemotherapy.[86] For some, fatigue lasts long after treatment and can significantly interfere with QoL. Recommendations for how to screen and assess for fatigue are provided online (see Supporting Information Table 1) and come from the ASCO guideline.[18] Treatable causes of fatigue include anemia, thyroid dysfunction, OSA, and cardiac dysfunction.[18] For those who do not have an identifiable physical cause of fatigue, contributing factors, such as mood disorders, poor sleep hygiene, and pain, should be addressed.[18] Additional information related to distress/depression can be found under Recommendation 3.22.

A regular exercise regimen can help reduce fatigue, help patients feel better physically and emotionally, and help them cope (see Recommendation 4.3).[18,87] CBT may also lessen fatigue.[88,89] There are minimal data to support using pharmacologic agents to manage fatigue in this population, with larger RCTs indicating that neurostimulant medication does not significantly reduce fatigue.[18] Exercise interventions should be tailored to the needs and abilities of the individual HNC survivor. ASCO provides more detailed information on the management of fatigue for cancer survivors (instituteforquality.org/screening-assessment-and-management-fatigue-adult-survivors-cancer-american-society-clinical).[18] The NCCN Guidelines for CRF can be found at NCCN.org.[90]

Altered or loss of taste

Recommendation 3.10. It is recommended that primary care clinicians should refer HNC survivors with altered or loss of taste to a registered dietitian for dietary counseling and assistance in additional seasoning of food, avoiding unpleasant food, and expanding dietary options (LOE = IIA).

Clinical interpretation. Dysgeusia, or altered taste, is among the most common and burdensome acute toxicities of HN RT.[91,92] Dysgeusia depends on dose and volume of the irradiated tongue and is seen most often in patients with oral or oropharyngeal cancer.[93,94] Taste disturbance is most pronounced around 2 months after the end of RT, and partial recovery is expected over the course of years. No pharmacological therapy is proven effective for dysgeusia in HNC survivors. Collectively, level III evidence suggest significant burden of taste disturbance early after HN RT with negative effects on QoL and oral intake in survivorship. Refer patients for dietary counseling for assistance with food seasoning, selection, and expansion of food choices in the setting of taste disturbance.

Hearing loss, vertigo, vestibular neuropathy

Recommendation 3.11. It is recommended that primary care clinicians should refer HNC survivors to appropriate specialists (ie, audiologists) for loss of hearing, vertigo, or vestibular neuropathy related to treatment (LOE = IIA).

Clinical interpretation. HNC survivors with a history of ototoxic drug exposure (eg, cisplatin cumulative dose >100 mg/m^2) are at risk for chronic, potentially progressive sensorineural hearing loss.[95] Ototoxic agents first affect the high-frequency range (frequencies above those needed for speech processing). For this reason, hearing loss may not be detected until it progresses to the lower frequency range and interferes with routine communication. Hearing loss may also occur from local effects of surgery or RT from persistent swelling of the Eustachian tube. Treatment-related hearing loss can progress over time. Late neurotoxic effects of both cytotoxic agents and RT on the cochlear nerve, over and above normal age-related hearing loss, are implicated as the source of progressive hearing loss years after initial treatment in long-term HNC survivors.[96] On the basis of level III studies, it is recommended that HNC survivors with hearing loss be referred to an audiologist.[97] Proactive baseline and on-treatment monitoring for ototoxicity is favored for early recognition and management of hearing loss. Complete audiologic examination includes tympanometry, pure tone testing (air conduction and bone conduction), speech reception threshold and word-recognition testing, and distortion product otoacoustic emissions.[98,99] Audiologic intervention may include education to reduce noise exposure or fitting of hearing aids.

Sleep disturbance/sleep apnea

Recommendation 3.12. It is recommended that primary care clinicians: a) should screen HNC survivors for sleep disturbance by asking HNC survivors and partners about snoring and symptoms of sleep apnea (LOE = 0); b) should refer HNC survivors to a sleep specialist for a sleep study (polysomnogram) if sleep apnea is suspected (LOE = 0); c) should manage sleep disturbance similar to patients in the general population (LOE = 0); d) should recommend nasal decongestants, nasal strips, and sleeping in the propped-up position to reduce snoring and mouth-breathing. Room cool mist humidifiers can aid sleep as well by keeping the airway moist (LOE = 0); and e) should refer to a dental professional to test the fit of dentures to ensure proper fit and counsel HNC survivors to remove dentures at night to avoid irritation (LOE = 0).

Clinical interpretation. OSA appears to be common in HNC patients.[100] Primary radiation or chemotherapy can create long-term swelling of the tongue and larynx in these patients. Reconstructive techniques, especially flaps replacing the posterior tongue, can compromise the airway even after a tracheostomy is allowed to close. Radiation fibrosis may also restrict neck ROM and affect positioning during sleep. Recognition of any preexisting airway difficulties should be assessed, as these patients will be especially at risk.

The complications of OSA include hypoxia, hypertension, cardiac arrhythmias, and cardiopulmonary stress. It can lead to myocardial infarction, pulmonary hypertension, heart failure, and stroke. Sleep deprivation from the consequences of apnea will create excessive fatigue, daytime drowsiness, and cognitive difficulties. It may also slow reaction time, potentially contributing to motor vehicle accidents and falls. OSA can amplify recovery difficulties in HNC survivors.

Interventions can include continuous positive airway pressure (CPAP),[100] referral to behavioral therapy, education, weight-loss programs emphasizing diet and exercise, complementary therapy (eg, aromatherapy, guided imagery), and possible managed pharmacologic interventions.

Speech/voice

Recommendation 3.13. It is recommended that primary care clinicians: a) should assess HNC survivors for speech disturbance (LOE = 0); and b) should refer HNC survivors to an experienced speech-language pathologist if communication disorder exists (LOE = IA, IIA).

Clinical interpretation. Speech, voice, and/or resonance disturbance may alter understandability or acceptability of verbal communication in HNC survivorship.[101] New or progressive hoarseness or dysarthria can indicate new cancer and should be evaluated first by the HN surgeon. While rare (prevalence, <5%), de novo, radiation-associated, lower cranial neuropathies may cause delayed speech or voice deterioration in long-term survivors (eg, typically cranial nerve XII palsy causing dysarthria and cranial nerve X causing dysphonia).[102,103] Behavioral voice/speech therapies and prosthetic rehabilitation options should be considered. On the basis of two level IA RCTs and various level IIA studies, HNC survivors with communication disorders should be referred to a speech-language pathologist for assessment and management of speech, voice, and resonance disturbance. Early assessment and intervention are preferred.[104,105] In certain clinical scenarios, prosthetic rehabilitation is supported by numerous level IIA studies. Tracheoesophageal voice using a valved voice prosthesis optimizes QoL and intelligibility of speech after a total laryngectomy.[106] Tracheoesophageal prostheses are managed by speech-language pathologists. Prosthetic obturators fabricated by maxillofacial prosthodontists can improve speech resonance in patients with palatal defects, and palatal drop prostheses can improve articulation after subtotal or total glossectomy.[107] Prosthetic rehabilitation can be costly, and outcomes are highly dependent on familiarity of the provider (level 0); thus, referring clinicians are encouraged to seek expert teams for these specialty services.

Hypothyroidism

Recommendation 3.14. It is recommended that primary care clinicians should evaluate HNC survivor thyroid function by measuring thyroid-stimulating hormone levels every 6 to 12 months (LOE = III).

Clinical interpretation. In patients whose treatment has included RT of the neck, hypothyroidism is a significant and frequent permanent sequela. Hypothyroidism can occur as early as 4 weeks and as late as 10 years after treatment with a median time to hypothyroidism of 1.8 years.[108] After RT, the prevalence is 20% at 5 years and 27% to 59% in 10 years (depending on the technique of RT).[108-110] After surgery, the prevalence is 7% at 5 years and 39% at 10 years, which appears to be comparable to the general population.[110] RT to both sides of the neck increases the risk of hypothyroidism as does the addition of surgery or when surgery involves the thyroid.[108] Lifelong thyroid hormone-replacement therapy will need to be instituted in those patients found to be hypothyroid.

Physical Effects: Oral Health

Oral and dental surveillance

Recommendation 3.15. It is recommended that primary care clinicians: a) should counsel HNC survivors to maintain close follow-up with the dental professional and reiterate that proper preventive care can help reduce caries and gingival disease (LOE = IA); b) should counsel HNC survivors to avoid tobacco, alcohol (including mouthwash containing alcohol), spicy or abrasive foods, extreme temperature liquids, sugar-containing chewing gum or sugary soft drinks, and acidic or citric liquids (LOE = 0); and c) should refer HNC survivors to a dental professional specializing in the care of oncology patients (LOE = 0).

Clinical interpretation. Ongoing, diligent attention to oral health is essential in HNC survivors previously treated with RT. Many of the effects of RT to the HN may persist throughout the survivor's lifetime and present clinically challenging situations that necessitate ongoing communication and collaboration between primary care clinicians and dental professionals.[111] Dental specialists who have sufficient training and experience with HNC patients provide optimal oral care for these patients.[112] Ideally, the dental specialist should be included from the time of diagnosis to treat preexisting dental disease and to prevent and treat oral and dental complications that arise during and after treatment.

There are several factors that may influence the incidence and severity of oral complications in HNC survivors. One of the most controllable factors affecting oral health challenges in cancer survivorship is dental and oral health status before HNC treatment. Comorbid states that will potentially increase the severity of oral side effects must be considered and include poor nutritional status, diabetes, alcohol abuse, tobacco use, and poor general health status. Patient instructions should include: a) brushing with a very soft toothbrush and using dental floss after each meal; b) daily fluoride treatments using prescription 1.1% sodium fluoride toothpaste as a dentifrice or in customized delivery trays; c) timing and frequency of visual examinations, a check on dental occlusion, dental cleanings by a dental hygienist, dental x-rays, and inspection for recurrence and/or new oral primary cancers.

The main issues to be evaluated during the assessment of potential oral complications include dental caries, gingival status, periodontal abnormalities, oral mucosa health, taste, production of saliva, pain from mucositis, and ability to initiate swallowing. Long-term oral side effects from treatment include neurosensory alteration, loss of saliva and taste, and other functional changes.[111] Oral and dental infections are not uncommon, especially in patients receiving either radiation or chemotherapy and experiencing long-term xerostomia as a result of therapy. Osteonecrosis of the jaw is a rare but devastating side effect of treatment and may lead to pain, increased infection risk, and trismus. Pretreatment assessment of dental status and treatment of preexisting dental and gingival disease can prevent osteonecrosis. In patients with pain syndrome related to radiation-induced oral mucositis in cases of concomitant chemotherapy, gabapentin has been shown to significantly reduce oral pain.[113]

Caries

Recommendation 3.16. It is recommended that primary care clinicians: a) should counsel HNC survivors to seek regular professional dental care for routine examination and cleaning and immediate attention for any intraoral changes that may occur (LOE = 0); b) should counsel HNC survivors to minimize intake of sticky and/or sugar-containing food and drink to minimize the risk of caries (LOE = 0); and c) should counsel HNC survivors on dental prophylaxis, including brushing with remineralizing toothpaste, the use of dental floss, and fluoride use (prescription 1.1% sodium fluoride toothpaste as a dentifrice or in customized delivery trays; LOE = IA, 0).

Clinical interpretation. HNC survivors are at increased risk of dental caries secondary to disruption of salivary flow and composition as well as direct damage to dental structures from treatment (eg, chemotherapy-associated vomiting).[111,114-116] Close monitoring of dental and oral health should continue as long as salivary flow is reduced or salivary composition is abnormal, as caries can progress rapidly with these changes.[112,117]

Periodontitis

Recommendation 3.17. It is recommended that primary care clinicians: a) should refer HNC survivors to a general dentist or periodontist for thorough evaluation (LOE = 0); and b) should counsel HNC survivors to seek regular treatment from and follow recommendations of a qualified dental professional and reinforce that proper examination of the gingival attachment is a normal part of ongoing dental care (LOE = 0).

Clinical interpretation. Loss of gingival attachment within the radiation field can lead to subsequent dental infections, loss of teeth, and osteonecrosis, which can become a systemic health issue.[118] This condition can go unnoticed by the patient, as it is not usually painful, and signs of advancement cannot be readily detected upon visual examination of the oral cavity. Rapid deterioration of the supporting structures of the teeth is sometimes seen after HN RT and may lead to deep periodontal pockets, which can subsequently lead to infection or tooth loss.[119] This situation can increase the risk of osteoradionecrosis, a devastating complication with loss of the jawbone requiring debridement, hyperbaric oxygen treatments, and eventually reconstruction. Preextration and postextraction hyperbaric oxygen treatments from a certified facility should be considered if a tooth extraction becomes necessary. Management of advancing periodontal disease requires intervention and ongoing management by a qualified dental professional.[112]

Xerostomia

Recommendation 3.18. It is recommended that primary care clinicians: a) should encourage use of alcohol-free rinses if an HNC survivor requires mouth rinses to rehydrate the mucosa, neutralize pH, break-up mucus, and prevent crusting of the oral mucosa (a simple rinse can be made by adding one-half teaspoon of baking soda and one-fourth teaspoon of salt to 1 quart of water; other nonalcoholic rinses, such as aqueous chlorhexidine gluconate 0.12%, can be used according to the needs of the patient; LOE = 0); b) should counsel HNC survivors to consume a low-sucrose diet and to avoid caffeine, spicy and highly acidic foods, and tobacco (LOE = 0); and c) should encourage HNC survivors to avoid dehydration by drinking fluoridated tap water, but explain that consumption of water will not eliminate xerostomia (LOE = 0).

Clinical interpretation. One major issue affecting most HNC survivors treated with RT is xerostomia[120] because of reduction in salivary flow.[114] Most patients treated for nasopharyngeal, oral cavity, oropharyngeal, and hypopharyngeal tumors will be at risk for xerostomia. While some salivary gland tissue can be spared with newer techniques, dry mouth complications should still be expected. The direct effect of ionizing radiation on the salivary glands may be transient or permanent[115] and depends upon a variety of factors, including location of the primary tumor; the total amount of radiation received by the salivary glands; any other oncology treatments (eg, chemotherapy); comorbidities, such as autoimmune diseases; and those medical issues controlled by xerostomia-inducing medications, such as anticholinergics, antihypertensives, antihistamines, neurology and nervous system drugs, and decongestants. Patients who experience surgical ablation of the salivary glands or associated ducts will most often present with a lifetime of salivary hypofunction.[111] In addition to its negative impact on QoL, xerostomia can also have catastrophic effects on the dental and oral health and, subsequently, on the patient's general health.

Saliva, in its appropriate composition, offers many necessary protective benefits to dentition and oral homeostasis.[111] Salivary changes, whether resulting in dry mouth or thick, ropey saliva, compromise these protective features and can result in increased incidence of dental caries, sensitivity of nondecayed teeth, attrition and erosion of the dentition, mucosal injury, dysgeusia and hypogeusia, inability to wear dental prostheses, and increased incidence of oral infection. Primary care clinicians should not consider the presence of some saliva as resolution of the dry mouth issue and should refer patients complaining of thick or ropey saliva to a dental specialist trained to manage such conditions.[112] Patients with decreased salivary flow are at risk for rapid development of dental caries, many of which cannot be easily detected upon simple visual inspection of the oral cavity until the condition is advanced.

Xerostomia can create great difficulty in wearing dentures or dental appliances. Xerostomia increases the likelihood of mucosal injury from loss of proper dental occlusion or even rough foods.

Because xerostomia-induced dental caries are among the most common oral health issues observed in HNC survivors, primary care clinicians should rely upon the skills of a dental professional to procure and review dental radiographs, to properly assess the presence or risk for such dental caries to potentially avoid costly restorations, and to assess the possibility of tooth loss and its associated risks in this population.[112] Late-stage dental caries can quickly advance to a dental infection or abscess and become a systemic health risk if not adequately and properly treated. Dental pain may be a late symptom; therefore, patients should be educated about subtle dental signs or symptoms, such a strange taste or gum swelling.

Medications such as pilocarpine and cevimeline have shown promise in improving oral hydration and salivary flow in patients with xerostomia caused by graft-versus-host

disease and should be considered for use in HNC survivors. More studies are needed.[121,122]

Osteonecrosis

Recommendation 3.19. It is recommended that primary care clinicians: a) should monitor HNC survivors for swelling of the jaw and/or jaw pain, indicating possible osteonecrosis (LOE = 0); b) should administer conservative treatment protocols, such as broad-spectrum antibiotics and daily saline or aqueous chlorhexidine gluconate irrigations for early stage lesions (LOE = 0); and c) should refer to an HN surgeon for consideration of hyperbaric oxygen therapy for early and intermediate lesions, for debridement of necrotic bone while undergoing conservative management, or for external mandible bony exposure through the skin (LOE = 0).

Clinical interpretation. Osteonecrosis occurs usually from dental complications, lack of proper dental care, and tooth extraction. RT to the oral cavity and salivary glands increases the risk of osteonecrosis. Osteonecrosis can become a serious condition, and disease progression may ultimately lead to pathologic mandible fracture. Early osteonecrosis may manifest itself as small areas of intraoral exposed mandible. Early management of the condition with localized use of aqueous chlorhexidine gluconate 0.12% and systemic, broad-spectrum antibiotics, such as amoxicillin or erythromycin; appropriate dental care by a dentist; and localized smoothing of bone and conservative removal of sequestra (fragments of necrotic bone) can prevent disease progression.[111]

Oral infections/candidiasis

Recommendation 3.20. It is recommended that primary care clinicians: a) should refer HNC survivors to a qualified dental professional for treatment and management of complicated oral conditions and infections (LOE = 0); and b) should consider systemic fluconazole and/or localized therapy of clotrimazole troches to treat oral fungal infections (LOE = 0).

Clinical interpretation. There are many aerobic, anaerobic, and facultative anaerobic Gram-positive and Gram-negative bacteria that exist as part of the normal flora of the oral cavity. With treatment-related mucositis and resultant xerostomia, the normal bacterial flora of the mouth is disturbed,[116] resulting frequently in fungal overgrowth in the oral and hypopharyngeal areas, which may cause aggravation or recurrence of mucositis during or after treatment and present as a red or gray membrane that may easily bleed and be painful. This mucositis may be aggravated by preexisting dental and gingival disease and may make eating and swallowing very difficult. Although pain medicine will likely be necessary, topical and/or systemic treatments that may be necessary include antibacterial and antifungal medications or gabapentin.[111,113] Primary care clinicians should be aware that oral antibiotics for unrelated, systemic infections increase the likelihood of fungal overgrowth and infection in the oral cavity.

There are instances when oral candidiasis presents in an erythematous form that is almost invisible upon visual inspection of the oral cavity. Patients with this form will often complain of a burning or scalding sensation on the tongue and the oral mucosa with little or no clinical manifestation visibly apparent. Similarly, patients presenting with persistent angular cheilitis may be suffering from an underlying, untreated fungal infection, which can be resolved with proper antifungal therapy.

With an increasingly painful mouth, patients may become reluctant to maintain proper dental hygiene. Light use of a very soft, dry toothbrush and irrigation with recommended alcohol-free rinses may be of benefit until a normal hygiene routine can resume. Dental consultation is indicated if resolution does not occur.[112] Treatment with systemic fluconazole or topical therapy with clotrimazole troches may be recommended. Commonly prescribed nystatin is not the preferred treatment for these cases, because the drug is administered in suspension with high sugar content. Regular administration of a high-sugar solution in a xerostomic mouth is contraindicated because of the risk of increased dental caries.

If a patient wears a denture or dental appliance, it must be treated simultaneously with the mouth to avoid reinfection. Similarly, the patient should be instructed to change the toothbrush and remove the very end of any lip balm stick or lip cosmetics applicator.

Oral infections are not solely because of fungal species. Although herpes simplex viruses 1 and 2 have not been shown to reactivate specifically by oropharyngeal radiation,[123] if immunosuppressive agents are used, reactivation may occur.[111] Bacterial infections may be encountered because of the high population of cariogenic and periodontal bacterial pathogens that are normally present in the oral cavity. Proper management of infections of any kind is especially important in HNC survivors.

Psychosocial Effects

Psychosocial long-term and late effects in HNC survivors require awareness and management from both the specialist and the primary care clinician.

Health-related QoL concerns include altered eating, speech, esthetics, social disruption, depressive symptoms, and general health. In one study of HNC survivors, even among the highest functioning group, social disruption was reported at 80.8%, and depressive symptoms were reported at 71.5%.[124] Disruption of the control of daily life can lead

to feelings of diminished self and subsequent negative psychosocial impacts.[125]

Body and self-image

Recommendation 3.21. It is recommended that primary care clinicians: a) should assess HNC survivors for body and self-image concerns (LOE = IIA); and b) should refer for psychosocial care as indicated (LOE = IA).

Clinical interpretation. HNC and its treatment may dramatically change body appearance and alter the HNC survivor's perception of self. These concerns may decrease QoL outcomes related to sexual function and intimacy and social role disturbances, such as avoidance of social interaction because of altered speech, inability to eat in public, facial differences, and self-imposed embarrassment.[124-126] Such concerns when blended with possible physical changes may also contribute to employment and financial challenges.[124]

Prevalence of body image concerns and diminished self-perception among HNC survivors is high. Researchers[126] studied body image in 280 HNC patients undergoing surgical interventions and found that younger HNC patients were at a higher risk for body image concerns. Approximately 75% of HNC patients surveyed felt "concerned or embarrassed" by body changes after diagnosis. Fifty percent had frequent thoughts about appearance changes, 38% reported avoiding social activities, and 33% had behavioral concerns regarding grooming. Importantly, 69% indicated dissatisfaction with information provided by clinicians related to body image.

A metaanalysis[125] found that diminished sense of self was associated with impairments in functions, alterations to self-beliefs in one's destiny, encounters of rejection and injustice, and self-blame for the disease.[125] HNC survivors may need assistance with strategies to reestablish sense of self, value, and purpose. Counseling, support, and therapies should be considered for concerns over functional impairments, such as eating, speaking, socializing, maintaining and developing relationships, and employment.

Distress/depression/anxiety

Recommendation 3.22. It is recommended that primary care clinicians: a) should assess HNC survivors for distress, depression, and/or anxiety periodically (3 months posttreatment and at least annually), ideally using a validated screening tool (see Table 7[20,127-130]) (LOE = I); b) should offer in-office counseling and/or pharmacotherapy and/or refer to appropriate psychooncology and mental health resources as clinically indicated if signs of distress, depression, or anxiety are present (LOE = I); and c) should refer HNC survivors to mental health specialists for specific QoL concerns, such as to social workers for issues like financial and employment challenges or to addiction specialists for substance abuse (LOE = I).

Clinical interpretation. Many cancer survivors report ongoing difficulties in recovery and returning to "normal" after treatment.[2,131,132] Some survivors of cancer experience fear of recurrence,[133] which contributes to significant mental health problems for which they already have an increased risk, including distress, depression, and anxiety.[134,135] Prevalence estimates for anxiety, depression, and distress in cancer survivors are widely variable—the result of inconsistency in the use of measurement tools and differences in methodological approaches, such as the choice of comparators from the general population. However, among cancer survivors in general, the estimated prevalence of anxiety and depression is 17.9% and 11.6%, respectively.[136]

Evidence to support a higher level of distress in HNC survivors is demonstrated in several studies. Distress for HNC patients includes worry, anxiety, sadness, emotional concerns,[137] social disruption,[124] fear of recurrence, and posttraumatic distress disorder.[138] One study[139] reported that HNC patients had a prevalence of 15% to 50% for depressive disorders compared with 15% to 25% for cancer patients in general. Investigators[137] studied distress in 89 HNC patients and found that 75% reported emotional concerns and over 50% acknowledged feelings of worry. In a study[140] of 774 HNC patients, the most commonly reported reasons for distress were interpersonal relationships, uncertainty, and interference in activities. HNC patients also identified distress related to disease and treatment, stigma, and existential stress with moderate frequency. Fear of recurrence is also a concern among HNC survivors, because the risk of recurrence and/or second primaries for HNC survivors is high at 36%.[141]

To provide timely and appropriate support for patients with a history of HNC, primary care clinicians should be familiar with the mental health concerns they may experience, the tools to screen for and assess these problems, and the resources to care for patients (see Table 7: Validated Tools to Assess for Distress/Depression/Anxiety). A recent ASCO guideline adaptation comprehensively describes screening, assessment, and management of anxiety and depressive symptoms in adults with cancer.[17]

ASCO has algorithms for both depression and anxiety with scoring and patient print material on both (instituteforquality.org/screening-assessment-and-care-anxiety-and-depressive-symptoms-adults-cancer-american-society). The NCCN Guidelines for Distress Management[20] provide an algorithm for distress and depressive orders (nccn.org). The NCI also publishes a PDQ Guideline for care of depression (cancer.gov/about-cancer/coping/feelings/depression-pdq). The American Psychosocial Oncology Society Web site

TABLE 7. Validated Tools for Assessment of Distress/Depression/Anxiety

TOOL	INTENDED USE	HOW IT WORKS
Beck Stress Inventory (BSI)	Screen for anxiety	Patient grades 21 items on a scale from 0 (not problematic) to 3 (problematic)
Center for Epidemiological Studies Depression Scale (CES-D)[127-129]; cesd-r.com	Screen for depression	Patient self-reports scores from 0 to 3 concerning emotions and feelings over the past week; score of 16 or higher suggests clinical depression
Generalized Anxiety Disorder (GAD)-7;phqscreeners.com/	Screen for anxiety	Patient self-reports scores from 0 to 3 for 7 items for total score ranging from 0 to 21; score of 15 or above indicates severe anxiety
Hospital Anxiety Depression Scale (HADS)[130]	Screen for depression and anxiety	Patients self-report scores from 0 to 3 for 14 items with a final score between 0 and 21; score of 9 or higher suggests clinical significance
NCCN Distress Thermometer[20]; nccn.org	Screen for distress	Patient rates distress on a score from 0 (no distress) to 10 (extreme distress); score of 4 or higher is clinically significant
Patient Health Questionnaire (PHQ)-9; phqscreeners.com/	Screen for depression	Patient self-report scores from 0 to 3 over 9 items for a total score ranging from 0 to 27; score of 20 or above indicates severe depression

NCCN indicates National Comprehensive Cancer Network.

(apos-society.org/) can help primary care clinicians identify resources for patients.[142]

Health Promotion

See Table 8: Guideline for Health Promotion.

Information

Recommendation 4.1. It is recommended that primary care clinicians: a) should assess the information needs of the HNC survivor related to HNC and its treatment, side effects, other health concerns, and available support services (LOE = 0); and b) should provide or refer HNC survivors to appropriate resources to meet identified needs (LOE = 0).

Clinical interpretation. The information needs of HNC survivors and caregivers should be routinely assessed, and information about the long-term and late effects of HNC treatment, as well as information on health risk reduction and health promotion, should be provided. Resources that may be beneficial to share with patients include the ACS Survivorship Center Web site (cancer.org/survivorshipcenter), the ACS Web site (cancer.org), Journey Forward (journeyforward.org), the ASCO survivor and caregiver site (cancer.net), and the NCCN patient and caregiver resources (nccn.org/patients/default.aspx). Community-based organizations and patient advocacy groups often have helpful cancer survivorship information and resources for your local community. Survivorship Care Plans (see Recommendation 5.1) should also provide patients with information regarding long-term follow-up, potential late effects, and access to providers.

Healthy weight

Recommendation 4.2. It is recommended that primary care clinicians: a) should counsel HNC survivors to achieve and maintain a healthy weight (LOE = III); b) should counsel HNC survivors on nutrition strategies to maintain a healthy weight for those at risk for cachexia (LOE = 0); and c) should counsel HNC survivors if overweight or obese to limit consumption of high-calorie foods and beverages and increase physical activity to promote and maintain weight loss (LOE = IA).

Clinical interpretation. The ACS Nutrition and Physical Activity Guidelines for Cancer Survivors[87] are a resource for all cancer survivors, and the guidelines include recommendations to address the unique needs of HNC survivors. HNC survivors often experience significant, highly visible facial disfigurement and notable treatment-induced problems with eating, swallowing, breathing, and speech. HNC survivors may also experience loss of taste and smell, excessive dry mouth, and other deficits of functioning in the oral cavity. These effects of treatment can be debilitating for patients, as they may negatively impact appearance, communication, and ability to eat. As a result, HNC survivors may have difficulty gaining and maintaining a healthy weight. Avoiding wasting should be a primary aim of health promotion with these patients.

Primary care clinicians should intervene early to address eating issues, swallowing problems, and pain management to help HNC survivors maintain a healthy weight.

TABLE 8. Guideline for Health Promotion

RECOMMENDATION	LEVEL OF EVIDENCE[a]
It is recommended that primary care clinicians:	
4.1. Information a) Should assess the information needs of the HNC survivor related to HNC and its treatment, side effects, other health concerns, and available support services b) Should provide or refer HNC survivors to appropriate resources to meet identified needs	0
4.2 Healthy weight a) Should counsel survivors to achieve and maintain a healthy weight b) Should counsel HNC survivors on nutrition strategies to maintain a healthy weight for those at risk for cachexia c) Should counsel HNC survivors if overweight or obese to limit consumption of high-calorie foods and beverages and increase physical activity to promote and maintain weight loss	III (healthy weight), 0 (cachexia), IA (weight loss)
4.3. Physical activity Should counsel HNC survivors to engage in regular physical activity consistent with the ACS guideline, and specifically: a) Should avoid inactivity and return to normal daily activities as soon as possible after diagnosis b) Should aim for at least 150 min of moderate or 75 min of vigorous aerobic exercise per week c) Should include strength training exercises at least 2 d/wk	III (avoid inactivity), I, IA (aerobic exercise), IA (strength training)
4.4. Nutrition a) Should counsel HNC survivors to achieve a dietary pattern that is high in vegetables, fruits, and whole grains, and low in saturated fats, sufficient in dietary fiber and avoids alcohol consumption b) Should refer HNC survivors with nutrition-related challenges (eg, swallowing problems that impact nutrient intake) to a registered dietician or other specialist	IA, III (dietary pattern), 0 (referral)
4.5. Tobacco cessation Should counsel HNC survivors to avoid tobacco products and offer or refer patients to cessation counseling and resources	I
4.6. Personal oral health a) Should counsel HNC survivors to maintain regular dental care, including frequent visits to dental professionals, early interventions for dental complications, and meticulous oral hygiene b) Should test fit dentures to ensure proper fit and counsel HNC survivors to remove them at night to avoid irritation c) Should counsel HNC survivors that nasal strips can reduce snoring and mouth-breathing and that room humidifiers and nasal saline sprays can aid sleep as well d) Should train HNC survivors to do at-home HN self-evaluations and be instructed to report any suspicions or concerns immediately	0

ACS indicates American Cancer Society; HN, head and neck; HNC, head and neck cancer. [a]Level of evidence: I, meta-analyses of randomized controlled trials (RCTs); IA, RCT of HNC survivors; IB, RCT based on cancer survivors across multiple sites; IC, RCT based not on cancer survivors but on the general population experiencing a specific long-term or late effect (eg, managing fatigue, etc); IIA, non-RCT based on HNC survivors; IIB, non-RCT based on cancer survivors across multiple sites; IIC, non-RCT not based on cancer survivors but on the general population experiencing a specific long-term or late effect (eg, managing fatigue, etc); III, case-control or prospective cohort study; 0, expert opinion, observation, clinical practice, literature review, or pilot study.

Physical activity

Recommendation 4.3. It is recommended that primary care clinicians should counsel HNC survivors to engage in regular physical activity consistent with the ACS guideline, and specifically: a) should avoid inactivity and return to normal daily activities as soon as possible after diagnosis (LOE = III); b) should aim for at least 150 minutes of moderate or 75 minutes of vigorous aerobic exercise per week (LOE = I, IA); and c) should include strength training exercises at least 2 days per week (LOE = IA).

Clinical interpretation. Few HNC survivors participate in moderate or vigorous exercise, and more than 50% are sedentary.[143] HNC survivors should be advised to avoid inactivity and return to normal daily activities as soon as possible after diagnosis and continue to engage in regular physical activity.[87,144] HNC survivors should strive to exercise at least 150 minutes moderately or 75 minutes vigorously per week and include strength training exercises at least 2 days per week, as is recommended for the general population by the ACS.[87] Preliminary evidence from an RCT with 48 HNC survivors suggests that an individually tailored, supervised exercise program may improve functional capacity and QoL of HNC survivors undergoing chemoradiotherapy.[145]

Few studies have focused specifically on strategies to help HNC survivors meet recommended physical activity guidelines. HNC introduces unique and debilitating problems that may inhibit a survivor's ability to meet recommended levels of exercise. Researchers[146] conducted an RCT in which HNC survivors were assigned to either a 12-week progressive resistance exercise training program or a standardized therapeutic exercise program meant to address shoulder pain and dysfunction. The results indicated generally good adherence to the resistance program (91%), although the authors acknowledge that the generalizability of study findings to community-based settings is limited. Survivors who received more extensive neck dissection procedures and those who consumed alcohol daily were less likely to adhere to the exercise training program. Higher adherence was associated with nerve-sparing neck dissection and avoidance or limitation of alcohol intake.

Other studies have also found that higher levels of alcohol consumption interfere with adherence to self-care behaviors in noncancer populations.[147] The authors recommend that tailored interventions to increase exercise should address alcohol use and other unhealthy behaviors (eg, smoking). Primary care clinicians are also encouraged to note the degree of neck dissection treatment patients have received, recognizing that there may be added problems with adherence among those who underwent RND compared with those who underwent MRND or SND. Attention should be paid to anxiety, depression, and overall QoL, which also emerged as significant predictors of poorer exercise adherence. In lieu of an acceptable level of HNC-specific studies, primary care clinicians are encouraged to rely upon research with survivors of other cancers when counseling patients with HNC about physical activity. In general, it should be noted that any exercise is better than no exercise, and there are not necessarily specific exercises this population should perform. If specific impairments are identified (shoulder dysfunction, cervical radiculopathy, etc), referral to a rehabilitation specialist may be warranted.

Nutrition

Recommendation 4.4. It is recommended that primary care clinicians: a) should counsel HNC survivors to achieve a dietary pattern that is high in vegetables, fruits, and whole grains and low in saturated fats, sufficient in dietary fiber, and avoids alcohol consumption (LOE = IA, III); and b) should refer HNC survivors with nutrition-related challenges (eg, swallowing problems that impact nutrient intake) to a registered dietician or other specialist (LOE = 0).

Clinical interpretation. Dietary counseling should take into account common functional problems that impact eating in HNC survivorship (eg, dry mouth, dysphagia, taste disturbance). Patients with dysphagia have particular difficulty consuming vegetables and whole grains and more easily eat high-calorie foods. Patients with nutrition-related challenges, such as dry mouth, taste disturbance, or swallowing problems that impact nutrient intake, should be referred to a registered dietitian for assessment and personalized dietary counseling. Primary care clinicians should be aware that trouble with eating can result from multiple sources and lead to social isolation, depression, and other negative health consequences. Some of these sources include: dysphagia, stricture, dental extractions, trismus, xerostomia, taste disturbance, or psychological issues. Refer HNC survivors to specialists and resources according to the source of eating problems. According to most sources, about 75% of all HNCs are related to tobacco and alcohol use.[6] Thus, in addition to encouraging healthful eating, it is particularly important to emphasize avoiding tobacco (see Recommendation 4.5) and alcohol. One study[148] found that drinking more than three drinks a day was associated with an increased risk of HNC for both men and women. However, there is a need for more research to better understand the association between alcohol consumption and HNC risk. Specifically, many studies have small sample sizes, so they have collapsed HNC into a single, broad category and have not adjusted for tobacco use among study participants. Alcohol was originally established as a cause of upper digestive tract cancers (oral cavity, pharynx, larynx, and esophagus) in 1988,[149] and this was reaffirmed in a 2010 review.[150] The review noted that daily consumption of about 50 g of ethanol per day (a little more than three drinks) increases the risk for these cancers 2-fold to 3-fold compared with nondrinkers. Moreover, there seem to be synergistic effects of alcohol drinking and smoking on risk. This evidence is relevant to HNC survivors because of their substantial risk of developing a second primary HNC.[25] Despite substantial evidence that alcohol increases risk of these cancers, consumption of up to one drink per day for women and two drinks per day for men might lower the risk of heart disease. For cancer survivors, clinicians must

carefully consider several clinical and prognostic factors when advising survivors about alcohol consumption. For HNC survivors, avoiding consumption during treatment, particularly RT, is important, because it can lead to mucositis. Moreover, there is some evidence that HNC patients who continue alcohol consumption (and smoking) after diagnosis have lower survival rates than those who stop drinking.[151]

Tobacco cessation

Recommendation 4.5. It is recommended that primary care clinicians should counsel HNC survivors to avoid tobacco products and offer or refer patients to cessation counseling and resources (LOE = I).

Clinical interpretation. A recent study[152] suggests that approximately 48% of oral cavity and pharynx cancer deaths are attributable to smoking.[4] Although a large proportion of HNC patients will attempt to quit smoking before or during treatment,[153] 14% to 60% will relapse.[154-157] Continued smoking is associated with several negative outcomes, including increased risk of other smoking-related illnesses (eg, coronary artery disease) as well as higher rates of SPCs and recurrence of the original primary cancer.[158-160] In addition, smoking reduces treatment efficacy[161,162]; worsens treatment side effects[163-166]; and, ultimately, negatively impacts QoL, morbidity, and mortality.[158,167] Due to the numerous medical and psychosocial advantages of smoking cessation, primary care clinicians should strongly encourage and support patients to quit or maintain abstinence.

One study[168] found that, after controlling for several demographic and psychosocial variables, depression was a significant predictor of continued smoking among HNC survivors, surpassing lower levels of QoL and social support. In fact, among cancer survivors who continued to smoke, the prevalence of depression was much higher at 63.8% compared with only 26.7% among those who quit smoking after cancer diagnosis. Other research supports this finding—depressed smokers are 40% less likely to quit than smokers who are not depressed. Continued postsurgery abstinence has been associated with lower levels of depression among HNC survivors.[169] Collectively, these results suggest that primary care clinicians should pay keen attention to depressive symptoms in HNC survivors who are attempting to maintain abstinence from smoking. Primary care clinicians are encouraged to emphasize the negative consequences of smoking on medical and psychosocial outcomes when counseling patients.[168]

Timing of cessation appears to be critically important—in one study,[170] only 13% of the patients who were abstinent before surgery relapsed, whereas there was a 60% relapse rate among those patients who reported smoking in the week before cancer surgery. In addition, there were different predictors of relapse for these two groups. Among those who quit smoking before surgery, higher perceived difficulty and lower cancer-related risk perceptions predicted smoking relapse. For those who smoked before surgery, the biggest predictors were lower quitting self-efficacy, higher depression, and greater fears of cancer recurrence. Thus, primary care clinicians should encourage early cessation at diagnosis, address potential barriers to maintain abstinence (eg, quitting self-efficacy), and continue to provide support to promote long-term success of cessation efforts.

The majority of these recommendations for primary care clinicians are consistent across all forms of HNC. However, it should be noted that there are important differences between survivors of HPV-related and non-HPV–related HNC. Overall prognosis is worse among current or former smokers with HPV-related cancers, and they may be at increased risk for recurrence compared with HPV-related survivors who never smoked; therefore, encouraging survivors of HPV-related cancers to quit using tobacco products supports survival outcomes. HNC survivors should avoid the use of any tobacco products. Primary care clinicians should identify HNC survivors who use tobacco products and educate and counsel patients to quit through cessation programs, brochures and pamphlets, counseling, pharmacotherapy, and regular follow-up.[171]

Personal oral health

Recommendation 4.6. It is recommended that primary care clinicians: a) should counsel HNC survivors to maintain regular dental care, including frequent visits to dental professionals, early interventions for dental complications, and meticulous oral hygiene (LOE = 0); b) should test fit dentures to ensure proper fit and counsel HNC survivors to remove them at night to avoid irritation (LOE = 0); c) should counsel HNC survivors that nasal strips can reduce snoring and mouth breathing and that room humidifiers and nasal saline sprays can aid sleep as well (LOE = 0); and d) should train HNC survivors to do at-home HN self-evaluations and instruct patients to report any suspicions or concerns immediately (LOE = 0).

Clinical interpretation. Much has been said previously in this article about the importance of oral health in HNC survivors (see Physical Effects: Oral Health, above). It should be noted that the primary care clinician should emphasize the importance of meticulous dental hygiene practices at home in addition to regularly scheduled dental visits,[111,112] as the patient is the one on the front line of dental and oral health. Patients should not discontinue the use of prescription fluoride until instructed to do so by the dental professional. Patients are often lulled into a false

TABLE 9. Guideline for Care Coordination and Practice Implications

RECOMMENDATION	LEVEL OF EVIDENCE[a]
It is recommended that primary care clinicians:	
5.1. Survivorship care plan Should consult with the oncology team and obtain a treatment summary and SCP	0, III
5.2. Communication with other providers a) Should maintain communication with the oncology team throughout diagnosis, treatment, and posttreatment care to ensure care is evidence-based and well coordinated	0
b) Should refer HNC survivors to a dentist to provide diagnosis and treatment of dental caries, periodontal disease, and other intraoral conditions, including mucositis and oral infections, and communicate with the dentist on follow-up recommendations and patient education	
c) Should maintain communication with specialists referred to for management of comorbidities, symptoms, and long-term and late effects	
5.3. Inclusion of caregivers Should encourage the inclusion of caregivers, spouses, or partners in usual HNC survivorship care and support	0

HNC indicates head and neck cancer; SCP, survivorship care plan. [a]Level of evidence: I, meta-analyses of randomized controlled trials (RCTs); IA, RCT of HNC survivors; IB, RCT based on cancer survivors across multiple sites; IC, RCT based not on cancer survivors but on the general population experiencing a specific long-term or late effect (eg, managing fatigue, etc); IIA, non-RCT based on HNC survivors; IIB, non-RCT based on cancer survivors across multiple sites; IIC, non-RCT not based on cancer survivors but on the general population experiencing a specific long-term or late effect (eg, managing fatigue, etc); III, case-control or prospective cohort study; 0, expert opinion, observation, clinical practice, literature review, or pilot study.

sense of security that, once any moisture reappears in the mouth after treatment, everything is fine. This is most often not the case, as the first saliva to return after HN RT is not protective to the teeth or the oral mucosa.

If the patient is edentulous or partially edentulous and wears removable appliances such as a denture or partial denture, it is important that proper fit be evaluated on a regular basis.[111] Many HNC survivors with edentulous areas will experience a remodeling of the supportive ridge for the appliance, causing the denture to become loose and ill-fitting, and will rub the gums, tongue, or oral mucosa to the point of ulceration. Dentures or partials still in good repair may be relined by the dental professional to improve fit. The patient should be encouraged to take the appliances out overnight to give the oral tissues a rest and prevent nocturnal bruxing (grinding and clenching of teeth) if the dentures are ill-fitting. The dentures should be kept moist while out of the patient's mouth.

Mouth breathing can exacerbate xerostomia, recurrent oral mucositis, and oral infections, not to mention causing desiccation of the teeth and rapid advancement of dental caries.[111] Dentulous patients who mouth breathe will notice a more rapid formation of dental plaque and calculus. Efforts should be made to facilitate nasal respiration. Patients using a CPAP or other similar device to treat sleep apnea should be aware that vigilant attention to dental and oral health is of the utmost importance to avoid caries leading to abscesses that could develop into risks of osteoradionecrosis. Also, careful cleaning of the CPAP device is important to avoid contaminating the airway.

Care Coordination and Practice Implications

See Table 9: Guideline for Care Coordination and Practice Implications.

There are no clear guidelines for the shared care and comanagement of patients with HNC after the completion of active treatment. The time for optimal transition from oncology to primary care is unknown and should be based on the individual risk profile, the treating clinician's expertise, and resource constraints. HNC survivors may continue to see the oncology team for follow-up disease surveillance; however, they should also be seen by the primary care clinician for health maintenance and management of comorbidities that may or may not be related to cancer diagnosis and treatment.[172,173]

Survivorship care plan

Recommendation 5.1. It is recommended that primary care clinicians should consult with the oncology team and obtain a treatment summary and survivorship care plan (SCP) (LOE = 0, III).

Clinical interpretation. SCPs are recommended as an important tool to facilitate communication and allocation of responsibility during the transition from active treatment to survivorship care.[12,174] A summary of a patient's diagnosis and treatment received should be provided by the oncology team when a patient with HNC transitions care to other providers. A treatment summary should describe the type and stage/side of the cancer, the type of surgery, the name of the chemotherapy/hormones/biologics and cumulative doses of chemotherapy, and the types and cumulative

doses of RT, including the fields and extent of the radiation.[12,175]

Ideally, the oncology and primary care teams should work together with the patient to develop an individualized cancer SCP that provides recommendations for the type and timing of follow-up scans, laboratory tests, and office visits. The care plan should include information on the risk for late effects of treatment and what to watch for specifically based on the type of cancer and treatment received. Patients should be assessed for the presence of these physical and psychosocial effects and be referred to the appropriate providers and services as indicated in the recommendations detailed above. For various SCP templates, visit cancer.org/survivorshipcareplans.

Communication with other providers

Recommendation 5.2. It is recommended that primary care clinicians: a) should maintain communication with the oncology team throughout diagnosis, treatment, and post-treatment care to ensure that care is evidence-based and well coordinated (LOE = 0); b) should refer HNC survivors to a dentist to provide diagnosis and treatment of dental caries, periodontal disease, and other intraoral conditions, including mucositis and oral infections, and communicate with the dentist on follow-up recommendations and patient education (LOE = 0); and c) should maintain communication with specialists referred to for management of comorbidities, symptoms, and long-term and late effects (LOE = 0).

Clinical interpretation. Communication and cooperation among providers and HNC survivors is critical, with the oncology team providing concrete recommendations for care when needed or requested by other providers.[172] Clear communication regarding the respective roles of different members of the health care team is critical to a successful transition to survivorship care.

The primary care clinician should serve as a general medical care coordinator throughout the spectrum of cancer detection and aftercare, focusing on evidence-based preventive care and the management of preexisting comorbid conditions; regularly addressing the patient's overall physical and psychosocial status; making appropriate referrals for psychosocial, rehabilitative, or other specialist care as needed; and coordinating those components of survivorship care that are agreed upon with the treating clinicians. Treatment of HNC is complex; therefore, decisions about and coordination of cancer treatment should be left to the oncology team.

Inclusion of caregivers

Recommendation 5.3. It is recommended that primary care clinicians should encourage the inclusion of caregivers, spouses, or partners in usual HNC survivorship care and support (LOE = 0).

Clinical interpretation. Caregivers have to cope with the physical aftermath of the survivors' treatment and help manage long-term and late effects, in addition to the caregiver's own psychosocial and physical unmet needs.[176] Successful coordination of care involves not only a comprehensive care team, including primary care clinicians, but also the informal caregivers (usually the spouse/partner/family member) who provide ongoing care to cancer survivors in the home.[177] Furthermore, most caregivers are older adults who are also managing health problems. When possible, primary care clinicians should include caregivers of HNC survivors in all follow-up care appointments to optimize survivor wellness.

Limitations

A significant limitation of this guideline is the limited evidence base to provide clear and specific recommendations for the prevention and management of long-term and late effects of cancer survivors. There are few prospective RCTs testing interventions among HNC survivors. The majority of the citations characterizing the risk and magnitude of risk of late effects and management recommendations rely predominantly on case-control studies with fewer than 500 participants and reviews that combine studies with various outcome measures. There were several cohort studies that used population-based data to estimate the risk of late effects.

Another limitation is the reliance on previous guidelines for surveillance and symptom management. In addition, the literature review was not managed by a clinical epidemiologist because of limited resources and, instead, was conducted by project staff and an ACS librarian. Furthermore, the guidelines did not result directly from the development of specific clinical questions asked before the literature review, and guidelines included in the literature review were not evaluated through an instrument such as the Rigor of Development subscale of the Appraisal for Guidelines for Research and Evaluation (AGREE II) Instrument. Recommendations are based on current evidence in the literature, but most evidence is not sufficient to warrant a strong recommendation. Rather, recommendations should be largely seen as possible management strategies given the current limited evidence base.

Although the ACS clinical practice guidelines represent expert recommendations on the best practices in disease management to provide the highest level of cancer care, it is important to note that many patients have limited access to medical care.[178] Racial and ethnic disparities in health care contribute significantly to this problem in the United States.

Patients with cancer who are members of racial/ethnic minorities suffer disproportionately from comorbidities, experience more substantial obstacles to receiving care, are more likely to be uninsured, and are at greater risk of receiving poor-quality care than other Americans.[179-182] Many other patients lack access to care because of their geographic location and distance from appropriate treatment facilities.[183] Awareness of these disparities in access to care should be considered in the context of this clinical practice guideline, and health care providers should strive to deliver the highest level of cancer care to these vulnerable populations. The ACS believes cancer clinical trials are vital to inform medical decisions and improve cancer care, and all patients should have the opportunity to participate. Clinicians should be aware of trials for interventions other than cancer-directed treatments, and it is important to consider trials of interventions for palliative and supportive care, surveillance methods, etc, when available.

A complicating factor of creating evidence-based recommendations is the frequent presence in patients of two or more chronic conditions—referred to as multiple chronic conditions (MCCs).[184] Patients with MCCs are a complex and heterogeneous population, making it difficult to account for all of the possible permutations to develop specific recommendations for care. The best available evidence for treating index conditions like cancer is often from clinical trials in which study selection criteria may exclude patients with MCCs to avoid potential interaction effects or confounding of results. Consequently, the reliability of outcome data from these studies may be limited, thereby creating constraints for expert groups to make recommendations for care in this heterogeneous patient population. Because many patients for whom guideline recommendations apply present with MCCs, any treatment plan needs to take into account the complexity and uncertainty created by the presence of MCCs and should highlight the importance of shared decision making regarding guideline use and implementation. Therefore, in consideration of recommended care for the target index condition, clinicians should review all other chronic conditions present in the patient and take those conditions into account when formulating the treatment and follow-up plan. This may mean that some or all of the recommended care options are modified or not applied.

External Review

After finalization by the workgroup, the guideline was sent to additional internal experts and external experts for review and comment before submission for publication. Comments were reviewed by the expert panel and integrated into the final article before approval by the Clinical Practice Guideline Committee.

Guideline Implementation

ACS guidelines are developed for implementation across health settings. Barriers to implementation include the need to increase awareness of the guideline recommendations among front-line practitioners and survivors of cancer and caregivers and also to provide adequate services in the face of limited resources. This guideline will be distributed widely through the ACS health systems network. The ACS guidelines are posted on the ACS Web site at cancer.org/professionals.

Summary

HNC survivors face potentially significant effects from cancer and its treatment and deserve high-quality, comprehensive, coordinated clinical follow-up care. Primary care clinicians should consider each patient's individual risk profile and preferences of care to address physical and psychosocial effects. Patients should be provided support and referral to specialty providers to address physical, psychosocial, and practical effects after treatment. HNC survivors also need to be counseled on health promotion strategies to minimize and mitigate long-term and late effects and comorbid health conditions, to potentially increase survival.

To clarify the roles of all clinicians working with cancer survivors, we concur with the Institute of Medicine that cancer survivors and primary care clinicians should receive a survivorship care plan that includes a concise summary of treatment as well as a clinical follow-up care plan. Ideally, this plan would be constructed in partnership with the survivor to identify and prioritize goals for survivorship care and would be communicated to the patient to ensure their understanding of individual risks; recommended tests, procedures, and supportive-care strategies; and how to optimize wellness. Survivorship care should be coordinated with treating cancer specialists.

More Resources

In addition to this guideline, tools and resources are available to assist primary care clinicians in implementing these recommendations. *CA* offers a Patient Page (onlinelibrary.wiley.com/enhanced/doi/10.3322/caac.21344/) to help patients understand how to use this guideline to talk to the primary care clinician about surveillance and screening, symptom management, healthy behaviors, and care coordination. *CA* also offers free continuing medical education and free continuing nursing education for this article at acsjournals.com/ce as an additional resource for physicians and nurses. The Survivorship Center also offers The George Washington University Cancer Institute's Cancer Survivorship E-Learning Series for Primary Care Providers (The E-Learning Series), a free, innovative, online,

continuing-education program to educate primary care clinicians about how to better understand and care for survivors in the primary care setting. Continuing education credits are available at no cost to physicians, nurse practitioners, nurses, and physician assistants for each 1-hour module. Learn more about The E-Learning Series at cancersurvivorshipcentereducation.org. For these resources and more to support guideline implementation, visit cancer.org/professionals.

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