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### Title

Time for a Paradigm Shift in Head and Neck Cancer Management During the COVID-19 Pandemic

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3 **Time for a paradigm shift in head and neck cancer management**  
4 **during the COVID-19 pandemic**  
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6

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43 **Author Contributions**

44 Albert Y. Han, MD, PhD Conception and design of the work, the acquisition, analysis and  
45 interpretation of data for the work

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50 interpretation of data for the work

51

52 **Abstract**

53 **Objective:** The coronavirus disease 2019 (COVID-19) pandemic has caused physicians and  
54 surgeons to consider restructuring traditional cancer management paradigms. We aim to review  
55 the current evidence regarding the diagnosis and management of head and neck cancer, with an  
56 emphasis on the role of the multidisciplinary team (MDT) during a pandemic.

57

58 **Data Sources:** PubMed, Google Scholar, the American Academy of Otolaryngology—Head and  
59 Neck Surgery and the American Head and Neck Society COVID-19 resources were examined.

60

61 **Review Methods:** Studies on the treatment of head and neck cancer guidelines during COVID-  
62 19 setting were reviewed. A total of 54 studies were included. Given the continuously evolving  
63 body of literature, the sources cited includes the latest statement from medical/dental societies.

64

65 **Results:** The unpredictable fluctuation of hospital resources and the risk of the nosocomial  
66 spread of SARS-CoV-2 have direct effects on head and neck cancer management. Using an  
67 MDT-approach to help define “essential surgeries” for immediately life- or function-threatening  
68 disease processes in the context of available hospital resources will help to maximize outcomes.

69 Early enrollment in an MDT is often critical for considering non-surgical options to protect

70 patients and health care workers. The role of MDT continues after cancer treatment if delivered,  
71 and the MDT plays an essential role in surveillance and survivorship programs in these  
72 challenging times.

73

74 **Conclusion:** Head and neck cancer management during the COVID-19 pandemic poses a unique  
75 challenge for all specialists involved. Early MDT involvement is important to maximize patient  
76 outcomes and satisfaction in the context of public and community safety.

77 [250/250 words]

78

79 **Introduction**

80           The current coronavirus 2019 (COVID-19) pandemic is a systemic viral syndrome  
81 caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).<sup>1</sup> Since its  
82 discovery in Wuhan, the rapid propagation of SARS-CoV-2 has led to unprecedented and  
83 extreme public health measures to limit its communal and hospital spread. The American  
84 College of Surgeons initially recommended postponing all non-emergent surgeries during this  
85 pandemic with recent plans to resume elective cases in a step-wise fashion.<sup>2,3</sup> The American  
86 Academy of Otolaryngology—Head and Neck Surgery (AAO-HNS) and the American Head and  
87 Neck Society recommended minimizing mucosal aerosolizing procedures and surgeries,  
88 including tracheostomy.<sup>4,5</sup> As the medical community has become more familiar with natural  
89 history, several guidelines and commentaries have been published in various capacities to  
90 provide insights into the impact of COVID-19 on head and neck cancer care.<sup>6,7</sup>

91           The current pandemic situation resembles other natural disasters such as floods and  
92 earthquakes. After Hurricane Katrina in 2005, delays in care occurred because hospital capacity  
93 was reduced by 80%,<sup>8</sup> and head and neck cancer patients from all sociodemographic  
94 backgrounds had difficulty obtaining cancer treatment.<sup>9</sup> During natural disasters, patients often  
95 ignore ominous symptoms and signs of cancer due to the more immediate needs of finding food  
96 and shelter. After the Fukushima earthquake in 2011, delays in seeking medical consultation  
97 among patients with a high risk of breast cancer lingered for 5 years.<sup>10</sup> During the 1918 influenza  
98 pandemic, three separate “waves” were observed, with the second wave of the pandemic in the  
99 fall of 1918 being responsible for most of the deaths from the pandemic.<sup>11</sup> Thus the immediate  
100 and long-term effects of the current COVID-19 pandemic could linger for a decade.

101 For many patients with head and neck cancer, surgery is the mainstay of therapy, with the  
102 head and neck surgeon assuming the greatest patient advocate role prior to diagnosis. Guidelines  
103 on subsite-specific surgery<sup>12</sup> and the protection of healthcare workers (HCW) during surgery<sup>13</sup>  
104 have been released. However, during in the wake of initial “wave” of this unprecedented  
105 pandemic, our approach to head and neck cancer must be restructured to provide patient-centered  
106 care while dynamically measuring public health concerns and hospital resources. We encourage  
107 early involvement of the MDT in managing head and neck cancer patients to discuss the optimal  
108 treatment plans and the indications of an “essential surgery” (a life- or function-threatening  
109 surgery) within the confines of the pandemic. Furthermore, we emphasize patient empowerment  
110 for early discharge and the prevention of unnecessary emergency room visits. The roles of  
111 patient-centric MDT should be expanded to include non-medical support staffs, including  
112 psychologists and social workers, to provide comprehensive cancer care during survivorship.

113

## 114 **Methods**

115 A literature review was conducted via PubMed and Google Scholar searches and through  
116 examination of the AAO-HNS COVID-19 Resources and the AHNS COVID-19 Bulletin and the  
117 Head & Neck COVID vs Cancer Special Collections. A total of 54 studies were included. Given  
118 the continuously evolving body of literature as well as the recent nature of the COVID-19  
119 outbreak, the cited sources include journal pre-proofs that have been accepted for publication.

120

## 121 **The initial approach to a head and neck cancer patient**

122 Patient safety, community infection prevention, and the safety of HCWs must be  
123 considered during the COVID-19 pandemic. First and foremost, cancer patients are one of the

124 most vulnerable subpopulations during this pandemic. Cancer patients, especially those  
125 immunocompromised from therapy, are at a greater risk of contracting COVID-19,<sup>14</sup> and they  
126 are more likely to require intensive treatment or to result in mortality once infected (38%  
127 compared to 8% for the general population based on a patient cohort in China).<sup>15</sup> The head and  
128 neck surgeon is often the first specialist to be involved in the care for suspected head and neck  
129 cancer. In the traditional paradigm, the head and neck surgeon assesses the extent of tumor  
130 invasion for staging, performs a tissue biopsy for accurate histopathologic diagnosis, and  
131 discusses the risks and benefits of surgery. In the COVID-19 era, we recommend a greater  
132 reliance on cross-sectional imaging as well as minimally invasive approaches for tissue sampling  
133 (e.g., FNA of the lymph node). Furthermore, we recommend direct referral to the MDT (also  
134 known as the multidisciplinary tumor board) for patients who already have a tissue-confirmed  
135 diagnosis and adequate cross-sectional imaging.

136       Head and neck cancer patients require a face-to-face visit with a head and neck surgeon  
137 prior to the MDT meeting due to the need for endoscopy for accurate staging or tissue  
138 procurement. These visits would be considered “essential visits.” Examples include patients with  
139 laryngeal cancer who need a functional evaluation of their vocal cords and patients with  
140 suspected oral cavity squamous cell carcinoma without nodal disease who need a biopsy of the  
141 mucosal lesion. The NCCN Best Practice Feature recommends that every institution develop a  
142 criteria for an “essential visit” in the context of the infection-prevention protocol.<sup>16</sup> These  
143 “essential visits” must entail strict infection control and prevention, as discussed elsewhere.<sup>7,13</sup>

144

145 **Patient-centric multidisciplinary care of head and neck cancer**

146           The MDT meeting serves as a collaborative forum in head and neck cancer management.  
147   Maintaining clear communication between all specialists is critical during this uncertain time  
148   with fluctuating availability of hospital resources. The MDT is designed to centralize care with  
149   specialization and improve cost-effectiveness within the accepted standard of care.<sup>17-19</sup> The MDT  
150   has also been shown to increase the utilization of nonsurgical multimodal therapies and improve  
151   overall survival when age, stage, and year of diagnosis were controlled.<sup>20,21</sup> Furthermore, patient  
152   participation in an MDT program reduces travel time, improves communication between  
153   specialists, and enhances continuity of care.

154           In order to minimize the number of hospital visits and reassess the available treatment  
155   modalities due to the surge in hospitalizations, early enrollment in an MDT program is  
156   encouraged for any patients with mucosal cancer involving the upper aerodigestive tract. This is  
157   in contrast to the traditional paradigm and recent COVID-19 guidelines recommending MDT  
158   involvement only when there is uncertainty regarding multidisciplinary involvement.<sup>22,23</sup> Virtual  
159   MDT meeting during the COVID-19 era have allowed providers as far as 200 miles away to  
160   participate.<sup>24</sup> Patients are often requested to meet face to face with the MDT following the tumor  
161   board to discuss their treatment options. During this time of pandemic, patients may meet with  
162   the MDT via telemedicine, which has previously been shown to preserve accurate staging and  
163   decision-making.<sup>25</sup> We anticipate that patient participation in this discussion will greatly  
164   facilitate treatment decision-making with the patient.

165           While the treatment decision will depend on multiple factors surrounding the patient,  
166   given the extraordinary circumstances, we recognize the possible need to deviate from practices  
167   during the COVID-19 pandemic. Here, we provide some guidelines for treatment decision-  
168   making. Every effort must be made to provide or achieve equivalent outcomes to those of the

169 traditional standard-of-care therapy. The cancer treatment should be provided within 60 days  
170 after the diagnosis to prevent decreased survival related to treatment delay<sup>26</sup>; a target of within  
171 30 days for surgical therapy is even more efficacious.<sup>27-29</sup>

172 The decision for surgery should consider for patient survival, optimal oncologic control  
173 and protection of the patient, caregiver, and health care workers (HCWs). We propose the term  
174 “essential surgery” to define planned surgical interventions for preventing significant  
175 compromise of the patient’s survival or function. This is in contrast to the term “urgent surgery”  
176 used in other guidelines.<sup>23</sup> Key leaders of the departmental/divisional surgical committee should  
177 be present at MDT meetings for a timely discussion of whether surgery is feasible from  
178 administrative point of view, instead of having a surgical/departmental committee and a separate  
179 MDT as described previously.<sup>22,23</sup> The variables for determining what is an “essential surgery”  
180 include the need for a secure airway, the operative time, the length of planned hospital stay,  
181 anticipated unplanned hospital visits due to complications, and the duration of mucosal  
182 aerosolization following tracheostomy, and the anticipated need for adjuvant treatment  
183 (postoperative visits). The ACS has put forth the Elective Surgery Acuity Scale (ESAS) as part  
184 of its guidance for triage of non-emergent surgical procedures.<sup>2</sup> According to these guidelines,  
185 most cancers with highly symptomatic patients fall under Tier 3a and 3b (high acuity surgery in  
186 healthy and unhealthy patients, respectively). Currently, the ESAS recommends “do not  
187 postpone” status for Tiers 3a and 3b. The “essential surgery” described here would correspond to  
188 Tier 3a and 3b. A judicious consideration of prophylactic tracheostomy is recommended because  
189 it can create an infection risk for the patient, caregiver, and HCWs, even at a skilled nursing  
190 facility. In this framework, the best candidates for surgery would be patients with localized

191 mucosal cancer (e.g., superficial T1 oral tongue squamous cell carcinoma that will likely result  
192 in negative margin resection<sup>30</sup>) who can be discharged on the same day without a tracheostomy.

193         Given the possible surge in hospitalizations and the likelihood of delays for surgery  
194 during subsequent “waves” of the COVID-19 pandemic, the utility of non-surgical treatment  
195 using radiation or chemoradiation should be fully explored.<sup>31,32</sup> This includes preferential  
196 attempts at a traditional organ preservation approach that can be followed by surgical salvage.<sup>33</sup>  
197 Especially in extreme circumstances in which the operating facility becomes unavailable, the  
198 benefits of timely but traditionally substandard non-surgical therapy should be weighed against  
199 the diminished benefits of delayed surgery, which may pose suboptimal oncologic control and  
200 heightened infection risks for the patient and caregivers. Additionally, despite the promising  
201 success of early clinical trials using pembrolizumab, the utility of immunotherapy currently  
202 appears to be limited.<sup>34</sup>

203

#### 204 **UCLA Head and Neck Cancer Program: Case Study**

205         The patient-centric MDT at UCLA comprises head and neck surgeons, medical  
206 oncologists, radiation oncologists, neuroradiologists, head and neck pathology specialists,  
207 maxillofacial prosthodontists, nutritionists, head and neck mind and body psychologists, and a  
208 social worker. The weekly meeting is presided over by a full-time head and neck cancer program  
209 coordinator. Prior to the meeting, a head and neck cancer nurse practitioner compiles clinical  
210 data for discussion. Since the COVID-19 outbreak, our patient-centric MDT has moved to an  
211 online group meeting platform. After extensive discussion about the patient and his/her treatment  
212 options, a consensus is developed or further work-up is requested. The feasibility of scheduling

213 “essential surgery” in the context of current hospital constraints is discussed without delay,  
214 further streamlining patient care.

215         The unique aspect of the patient-centric MDT at UCLA is that it involves a real-time  
216 conversation with the patient regarding the treatment recommendation and salient issues  
217 (impacts of the treatment on survival, speech, swallowing, and aesthetics) in a unified voice.  
218 During this conversation, a head and neck mind and body specialist and a social worker are  
219 present to assist the patient with navigating the health care system during the vulnerable times.  
220 The conversation during this encounter is more critical than ever before. Before COVID-19, this  
221 patient encounter typically took place in person and all relevant practitioners would participate.  
222 Those patients who could not attend in person due to geographic or other restrictions would have  
223 a telephone conversation with a lead provider, with other referrals for in-person care organized  
224 as needed. With meeting restrictions during the COVID-19 pandemic, this patient encounter has  
225 transitioned to an online video meeting with one or more providers. While it may still be a  
226 second choice to an in-person encounter, the video meeting does offer several advantages over a  
227 telephone meeting that was previously conducted for many patients. The group video meeting  
228 enables patient family members to be present more fully in the encounter, which is essential for  
229 patient support. The visual cues from patient and family members also offers insights to the  
230 provider about patient comprehension, support structure, need for ongoing mental health  
231 services, and prognosis for recovery after a major surgery. Finally, the video platform allows  
232 greater physician-patient rapport than telephone alone. Specifically in the time of COVID-19 it  
233 can be very helpful for both patients and providers to see each other unmasked, even if separated  
234 by a video platform, to maintain recognition of each other’s humanity and a caring physician-  
235 patient relationship.

236

237 **Perioperative considerations for patients undergoing essential oncologic surgery**

238 For patients deemed to require “essential surgery” after the MDT discussion, we  
239 recommend taking the utmost precautions to protect the patient, caregivers, and HCWs from  
240 nosocomial SARS-CoV-2 infections. Several guidelines have been put forth regarding  
241 preoperative and airway management.<sup>13,32</sup> Briefly, the recommendations include safe and swift  
242 utilization of technology, early paralysis, minimal use of facemasks, abstinence from non-  
243 invasive ventilation, and the use of only low-flow nasal cannula. Before induction of anesthesia,  
244 the surgical team should have a clear post-operative plan with an anticipated duration of stay in  
245 the hospital as well as disposition plans. This will allow the house staff to coordinate home  
246 nursing or auxiliary services during surgery.

247 The surgical team should practice techniques that minimize the aerosolization of mucosa  
248 and blood as discussed elsewhere.<sup>35-37</sup> Drills and ultrasonic shears (e.g. Ethicon® Harmonic) can  
249 vaporize blood on contact.<sup>13</sup> Previous studies have shown the presence of HPV DNA in the  
250 vapors of CO2 lasers and electrocautery.<sup>38</sup> In addition, HIV-1 has been found in cool aerosol and  
251 vapors from surgical power instruments similar to the Stryker® oscillating bone saw.<sup>39</sup> While  
252 traditional closed-suctioning should be used for large defects prone to hematoma, a Penrose drain  
253 may be considered in lieu of closed-suctioning in selective or supraomohyoid neck dissections.<sup>40</sup>

254 During the immediate post-operative period, the surgical team, nursing staff, and support  
255 specialists of MDT (e.g., social worker) must prevent non-essential delays for hospital discharge,  
256 including delays in placement, transportation and home health. This includes empowering  
257 patients and family with early trach teaching, providing drain care instructions, and educating  
258 patients regarding post-operative care to prevent unnecessary emergency room visits. Indeed,

259 early systematic discharge planning after admission increases the successful discharge rate and  
260 decreases unplanned readmission.<sup>41</sup> Involvement of mind and body specialists and social workers  
261 of the MDT will provide continuity of care and enhance patient compliance. Written discharge  
262 instructions must include visual representations of key information to aid recall.<sup>42</sup> Patients may  
263 be discharged with closed suction and Penrose drains, with the goal of removal in the clinic or  
264 even at home by the patient.<sup>40</sup> Of course, an early transition to self-care at home must be  
265 sensitive towards patients who may feel inadequately prepared for discharge.

266         After the patient is discharged from the hospital, the surgical team must be proactive in  
267 seeking postdischarge concerns at home. Previous studies have shown that about 8.4% of  
268 patients return to the ED after a head and neck surgery, mostly due to pain and infection, with an  
269 unplanned readmission rate of 3.2-5.1%.<sup>43,44</sup> The unplanned readmission rate is even higher  
270 (11.6%) in patients who received free flap reconstruction.<sup>45</sup> To prevent unnecessary emergency  
271 room visits, a surgical team member should be available for telehealth consultation. Clear and  
272 efficient communication via telehealth would allow the preemptive identification of patients with  
273 pain, infection and other post-operative concerns. High-risk patients, including those who have  
274 undergone free flap reconstruction or neck dissections, complain of xerostomia, and have  
275 medical comorbidities may require aggressive pain management.<sup>46</sup> A preemptive 24-hour follow  
276 up phone call to these patients may result in enhanced patient care.<sup>47</sup> We also recommend an  
277 empiric outpatient antibiotic regimen for suspected surgical site infections after telemedicine  
278 examinations performed using photographs or videos.

279         The patient's scheduled post-operative visit should be performed via telemedicine for a  
280 wound check and a discussion of the final pathology. Although patients in previous published  
281 studies generally favored in-person visits over telemedicine visits,<sup>48</sup> more than 95% of patients

282 were satisfied with a telemedicine visit to an otolaryngologist.<sup>49</sup> Wait time and technical  
283 difficulties were mentioned as reasons for dissatisfaction. Institutions, individual health care  
284 plans, and potentially the government should collaborate to assist patients with  
285 telecommunications infrastructure. At the post-operative telehealth visit, the patient may be  
286 referred to a radiation oncologist, medical oncologist, and/or the MDT as needed.

287

### 288 **Head and neck cancer surveillance**

289       Head and neck cancer surveillance via telemedicine directly affects a physician's ability  
290 to adhere to the NCCN surveillance guidelines. For this reason, it is critical to empower patients  
291 to be vigilant about any symptoms of recurrence. The need to reduce in-person clinic visits, in  
292 conjunction with the risks associated with endoscopic examination of the upper aerodigestive  
293 tract, has generated queries regarding the optimal timing and method for head and neck cancer  
294 surveillance. Head and neck surgeons may start to rely more heavily on cross-sectional imaging  
295 for detecting cancer recurrence. Current NCCN guidelines recommend a positron emission  
296 tomography/computed tomography (PET/CT) scan within 3-6 months of definitive head and  
297 neck cancer treatment.<sup>50</sup> After this initial post-treatment scan, no consensus guidelines exist on  
298 the frequency or modality of surveillance imaging in an asymptomatic patient due to the lack of  
299 survival benefits.<sup>51,52</sup> However, when routine flexible endoscopy and clinical surveillance are  
300 discouraged due to the pandemic, cross-sectional imaging and PET/CT would have greater utility  
301 in head and neck cancer surveillance.

302       In addition to monitoring patients for cancer recurrence, it is important that providers also  
303 continue standard post-treatment care including routine blood tests. The NCCN also recommends  
304 that all patients who receive significant intraoral radiation therapy undergo a dental evaluation at

305 least once every 6 months, to minimize the risk of radiation complications such as xerostomia,  
306 trismus, dental caries, osteoradionecrosis, and oral candidiasis.<sup>50</sup> There is an increased risk for  
307 cross infection of COVID-19 between dental practitioners and patients; thus the latest guidelines  
308 from the American Dental Association should be consulted.<sup>53,54</sup>

309

### 310 **Head and neck cancer survivorship**

311 Survivorship refers to the significant impacts of both the diagnosis and treatment of  
312 cancer on adult survivors, specifically its potential impact on health, physical and mental states,  
313 health behaviors, professional and personal identity, sexuality, and financial standing.<sup>50,55</sup> The  
314 holistic treatment of patients with head and neck cancer has always been an integral aspect of  
315 care; however, with the ongoing COVID-19 pandemic, providers need to be hypervigilant in  
316 addressing patients' psychosocial needs. Stay-at-home orders intended to promote social  
317 distancing also result in social isolation, particularly for those living alone. Increased rates of  
318 panic disorder, anxiety, and depression during the COVID-19 pandemic have been described.<sup>56</sup>  
319 Patients with head and neck cancer are at increased risk for depression and have a suicide  
320 incidence rate 3 times higher than that of the general population.<sup>57</sup> A review of head and neck  
321 survivorship predicted a greater mental health toll during the COVID-19 pandemic.<sup>58</sup> Since  
322 cancer patients are already at an increased risk for mental health disorders, policymakers must  
323 ensure that mental health resources are readily accessible during this time.

324 Head and neck surgeons should play an active role in screening their patients for  
325 depression and anxiety. As part of the MDT, professionally trained psychologists can help with a  
326 formal assessment and refer patients to specialized mental health resource as needed.<sup>59</sup> Since  
327 most in-person appointments with mental health professionals have come to a halt, patients now

328 need to rely on online counseling services in lieu of face-to-face visits. In China, the use of  
329 online mental health services has increased in response to the widespread anxiety, fear, and  
330 depression surrounding COVID-19.<sup>60,61</sup> In the United States, the availability of mental health  
331 services varies widely by location, and it is the responsibility of the MDT to be familiar with its  
332 institutional resources and protocols so that patients can receive optimal care.

333         The Crisis Counseling Assistance and Training Program (CCP) is a grant program  
334 designed to help individuals and communities recover following a major disaster. Following  
335 Hurricane Katrina in 2005, there was a large spike in the number of individuals with mental  
336 health problems such as depression, anxiety and post-traumatic stress disorder (PTSD).<sup>62</sup> In  
337 response to this natural disaster, new programs were created via the CCP emphasizing outreach,  
338 supportive counseling, education, consultation, and linkages to other services. Thus, during this  
339 current time of crisis, it is important for local and state legislatures to identify and apply for  
340 resources to increase the accessibility of mental health services.

341

342 **Conclusions**

343           Head and neck cancer management during the COVID-19 pandemic poses a unique  
344 challenge for all specialists involved, especially head and neck surgeons. Given the numerous  
345 variables involved and the dynamic nature of resource availability and hospital policies, early  
346 patient-centric MDT involvement is important to maximize patient outcomes and satisfaction, in  
347 the context of public and community safety. Furthermore, proactive survivorship programs play  
348 an integral role in preemptively identifying of patients at risk for not only medical or oncological  
349 problems but also psychological distress during this time of heightened social isolation.

350

351 **Summary of key points**

352 1. Patients with newly diagnosed head and neck cancer, with a biopsy and adequate imaging  
353 should be directly referred to a multidisciplinary team (MDT) involving head and neck surgeons,  
354 medical oncologists, radiation oncologists and other ancillary staff. The MDT meeting should be  
355 a venue for conversation between the patient and a unified voice of cancer specialists.

356 2. Due to the risk of nosocomial spread, maximal use of cross-sectional imaging in staging  
357 and surveillance would be an ideal alternative to flexible endoscopy unless the latter is deemed  
358 essential.

359 3. Encounters with the head and neck surgeon prior to the MDT meeting must be limited to  
360 surgical emergencies and “essential” visits necessary for accurate staging or tissue procurement  
361 that would otherwise result in suboptimal treatment. In-office procedures involving the mucosa  
362 should meet the same standards as those held in operating rooms.

363 4. Surgery is traditionally the primary modality therapy for most head and neck cancers, but  
364 non-surgical alternatives must be carefully considered in anticipation of treatment delays and the  
365 risk of nosocomial spread of SARS-CoV-2 during and after surgery.

366 5. With the MDT, the head and neck surgeon should determine whether the surgery is  
367 “essential” to the patient. “Essential” surgery is defined as a surgery that would prevent  
368 significant survival- or functional-deficits as compared to non-surgical alternatives.

369 6. Once the decision is made that the patient requires “essential” surgery, the surgical team  
370 and non-medical support specialists of the MDT (mind and body psychologists and social  
371 workers) must plan for early discharge and empower the patient for self-care. Every effort must  
372 be made to prevent prolonged hospitalization due to non-medical reasons, including due to  
373 patient placement and transportation.

- 374 7. Detailed discharge education, including written instructions enhanced with diagrams, will  
375 prevent unplanned emergency room visits and readmissions.
- 376 8. Immediate post-operative visits and cancer surveillance should be performed via  
377 telemedicine, when possible; face-to-face encounters should be reserved for any concerning  
378 symptoms or emergencies.
- 379 9. Following the acute phase of cancer treatment, patients should be enrolled in institutional  
380 cancer survivorship programs that include non-medical support specialists of the MDT, to  
381 monitor for long-term side effects, including psychological distress from diagnosis and  
382 treatment. Local municipal public health agencies are encouraged to work with hospitals to  
383 develop mental health screening programs during this time of pandemic.
- 384 10. Patient safety and optimal oncologic control are the primary goals in this line of duty, but  
385 strict infection prevention measures should be upheld to protect physicians and other hospital  
386 care workers involved in caring for patients.

387

388 **Figure 1.** Overview of head and neck cancer management in the COVID-19 era.

389

390 **References**

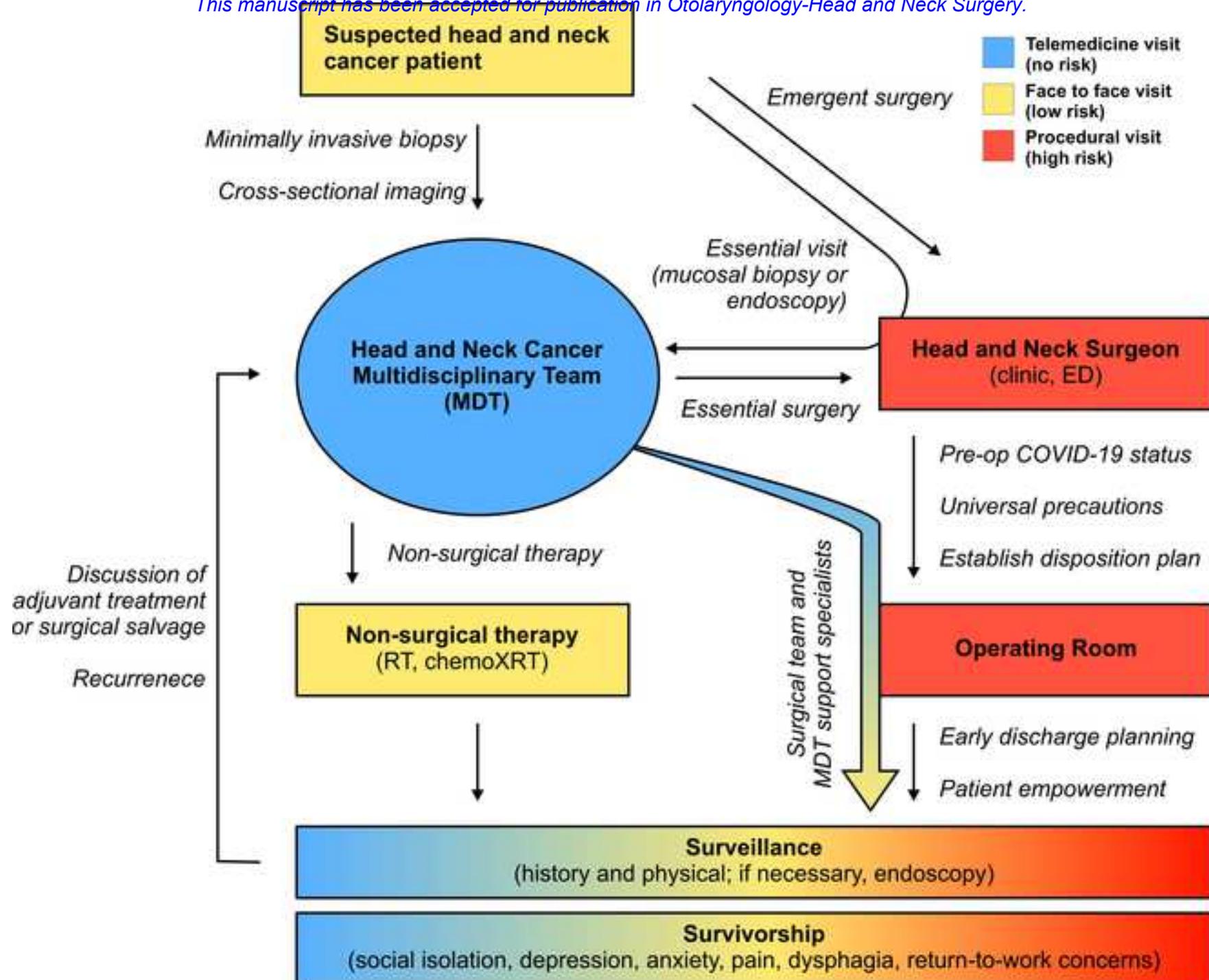
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