

# THE LANCET Oncology

## Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Mehanna H, Hardman JC, Shenson JA, et al. Recommendations for head and neck surgical oncology practice in a setting of acute severe resource constraint during the COVID-19 pandemic: an international consensus. *Lancet Oncol* 2020; published online June 11. [http://dx.doi.org/10.1016/S1470-2045\(20\)30334-X](http://dx.doi.org/10.1016/S1470-2045(20)30334-X).

**Appendix A: The participating national and international bodies and their representatives****HNCIG | Head & Neck Cancer Surgery During COVID-19**

<b>Group or Society</b>	<b>Name of representative</b>
African Head and Neck Society (AfHNS)	Johannes J. Fagan Anna Konney
American Society for Radiation Oncology (ASTRO)	Sue S. Yom
American Society of Clinical Oncology (ASCO)	Ravindra Uppaluri
Australian and New Zealand Head and Neck Cancer Society (ANZHNS)	Benedict J. Panizza
British Association of Head & Neck Oncologists (BAHNO)	Cyrus Kerawala
Canadian Cancer Trials Group (CCTG)	Anthony C. Nichols
Cancer Trials Ireland (CTI)	Paul Lennon
Danish Head and Neck Cancer Group (DAHANCA)	Christian Godballe
Dutch Head and Neck Society (NWHHT)	Robert P. Takes
Eastern Cooperative Oncology Group and The American College of Radiology Imaging Network (ECOG-ACRIN)	Mihir R. Patel
European Head and Neck Society (EHNS)	Wojciech Golusiński
European Organisation for Research and Treatment of Cancer (EORTC)	Christian Simon Lisa Licitra
European Society for Radiotherapy and Oncology (ESTRO)	David J. Thomson
French Head and Neck Cancer Group (GORTEC)	Haitham Mirghani
Fudan University Shanghai Cancer Center (FUSCC)	Yu Wang
German Interdisciplinary Working Group for Head and Neck Tumors (IAG-KHT)	Andreas Dietz
Head and Neck Cancer Society of Turkey (HNSCT)	Sefik Hosal
Head and Neck Cancer Study Group of the Japan Clinical Oncology Group (JCOG-HNCSG)	Akihiro Homma
Hellenic Cooperative Oncology Group (HeCOG)	Efthymios Kyrodimos
Hong Kong Nasopharyngeal Carcinoma Study Group (HKNPCSG) AND The Hong Kong Head and Neck Society (HKHNS)	Velda Ling Yu Chow
International Association of Oral Oncology (IAOO)	Moni A. Kuriakose
International Committee of the American Head and Neck Society (AHNS)	Jason Y K Chan C. René Leemans Dennis Kraus
International Federation of Head and Neck Oncological Societies (IFHNOS) AND Tata Medical Center	Pankaj Chaturvedi
Korean Society of Head and Neck Surgery (KSHNS)	Yoon Woo Koh
Latin American Clinical Oncology Group (LACOG)	Alvaro Sanabria Luiz P. Kowalski
National Cancer Center/Chinese Academy of Medical Sciences and Peking Union Medical College Cancer Hospital	Yi-ming Zhu
National Cancer Centre Singapore (NCCS) AND Head and Neck Cancer Society, Singapore (HNCS)	N. Gopalakrishna Iyer
National Cancer Research Institute-UK (NCRI)	Vinidh Paleri
North West Italian Oncology Group (GONO)	Cesare Piazza Lisa Licitra
NRG Oncology- Head and Neck Cancer Committee	Stephen Y. Lai
Spanish Head and Neck Cancer Cooperative Group (FETTCC)	Pablo Parente Arias
Taiwan Cooperative Oncology Group (TCOG) AND Taiwan Head and Neck Society (THNS)	Pei-Jen Lou
Trans-Tasman Radiation Oncology Group (TROG)	Bernard Lyons Danny Rischin
United Arab Emirates Otorhinolaryngological and Head and Neck Society	Mohammad AlFalasi

**Appendix B: Summary of the questions and results of all three rounds of the Delphi process for management of HNC during the COVID-19 pandemic.**

## HNCIG | Head & Neck Cancer Surgery During COVID-19

QUESTIONS COLOR KEY	RESULTS COLOR KEY
Item dropped after Round 1	≥80% response (Strong agreement)
Item dropped after Round 2	67–80% response (Agreement)
Item reached agreement after Round 3	20–66% response (No Agreement)
No agreement reached OR Question clarified in subsequent rounds	≤20% response (Strong agreement against)

### PART 1

## Clinic protocols in the context of increased SARS-CoV-2 virus prevalence

	1st round	2nd round	3rd round
<b>Considering the prevalence of SARS-CoV-2 in the community..</b>			
<b>Q1. Would you perform flexible nasoendoscopy in clinic:</b>			
a. In an asymptomatic patient with previous head and neck cancer, attending clinic for routine head and neck cancer follow up: <b>(Choose one)</b>			
-FNE is appropriate only if using adequate personal protective equipment (PPE)	25.0%	40.0%	40.0%
-FNE is not appropriate in these patients	72.5%	60.0%	60.0%
-FNE is appropriate even without adequate PPE	2.5%	0.0%	
b. In a patient with symptoms or exam findings suggestive of new primary cancer or recurrence: <b>(Choose one)</b>			
-FNE is appropriate even without adequate PPE	10.0%	0.0%	
-FNE is appropriate only if using adequate PPE	85.0%	92.5%	
-FNE is not appropriate in these patients	5.0%	7.5%	
c. In a patient with no history of head and neck cancer and low risk symptoms (eg, globus): <b>(Choose one)</b>			
-FNE is appropriate only if using adequate PPE		27.5%	20.0%
-FNE is not appropriate in these patients		72.5%	80.0%
-FNE is appropriate even without adequate PPE		0.0%	
d. In a patient with concern for critical airway obstruction: <b>(Choose one)</b>			
-FNE is appropriate even without adequate PPE	17.5%	2.5%	
-FNE is appropriate only if using adequate PPE	77.5%	97.5%	
-FNE is not appropriate in these patients	5.0%	0.0%	
<b>Q2. Which of the following would you use to confirm a diagnosis of cancer..</b>			
-Panendoscopy of primary tumour under general anesthesia and biopsy?	55.0%	45.0%	
-Biopsy of primary tumour under local anesthesia or general anesthesia without panendoscopy?	62.5%	37.5%	
-Fine needle aspiration or core biopsy of suspicious lymph node + suspicious findings on imaging?	92.5%	7.5%	
-Highly suspicious findings on CT or MRI only without biopsy ?	20.0%	80.0%	
-Highly suspicious findings on PET/CT only without biopsy?	17.5%	82.5%	
<b>Q3. Considering the prevalence of SARS-CoV-2 in the community..</b>			
-A full panendoscopy should be performed at the time of biopsy of the primary tumour?		35.0%	65.0%
-If the primary tumour can be biopsied under local anaesthetic, a full panendoscopy (including laryngoscopy, hypopharyngoscopy and upper oesophagoscopy) under general anaesthetic should still be arranged?		15.0%	85.0%
-If the primary tumour requires a general anaesthetic for biopsy, then a full panendoscopy should still be performed at the same time?		67.5%	32.5%
<b>Q4. Surveillance practice for routine head and neck cancer patients, 3 months or more after surgery.</b>			
<b>Which of the following are acceptable methods of follow-up for these patients?</b>			
a. How would you perform the follow-up for these patients?			
-Video or phone consultation only	25.0%	25.0%	75.0%
-Combination of face to face and video/phone consultations	57.5%	75.0%	25.0%
-Video or phone consultation, with face to face review only if suspicious findings	-	80.0%	20.0%
-Face to face follow-up	17.5%	47.5%	52.5%
-No follow-up	0.0%	70.0%	30.0%
b. How frequently would you perform the follow-up?			
-Normal frequency of follow-up	55.0%	62.5%	67.5%
-Reduced frequency of follow-up	45.0%	37.5%	32.5%

-Increased frequency of follow-up	0.0%
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**Q5. What minimum criteria do you use to identify ACTIVE SARS-CoV-2 infection before surgery?**

	%
-Positive clinical history (including symptoms) alone	7.5%
-Positive clinical history & positive imaging together	5.0%
-Positive lab test alone	15.0%
-Positive clinical history & positive lab test together	27.5%
-Positive clinical history & positive lab test & positive imaging together	10.0%
-Any one positive finding (clinical history, lab test, or chest imaging)	32.5%
-Positive lab test & positive imaging	2.5%
-Positive chest imaging only (eg, CT)	0.0%
-We don't consider COVID-19 status before surgery	0.0%

Yes		No	
40.0%	60.0%	30.0%	70.0%
52.5%	47.5%	57.5%	42.5%
80.0%	20.0%		
72.5%	27.5%		
52.5%	47.5%		

**Q6. What delay to the timing of the operation would you consider in a patient who is COVID+ or highly suspected of COVID+ and who does not have indications for emergency intervention (eg, no impending airway obstruction)? (Choose one)**

	%
-When COVID-19 negative on repeat testing	12.5%
-When symptoms resolve regardless of whether a repeat test is done or not	-
-When both symptoms resolve and COVID-19 negative on repeat testing	67.5%
-No delay in surgery	0.0%
-Delay until symptoms resolve	5.0%
-Delay by 4 weeks	10.0%
-Delay by 8 weeks	2.5%
-Delay for longer than 8 weeks	2.5%

%
5.0%
0.0%
95.0%

**PART 2**

**Treatment protocols in the context of increased SARS-CoV-2 virus prevalence**

	1st round	2nd round	3rd round	
<b>Q1. In the case of an early T1/2 N0 oral cancer:</b>				
a. Acceptable delay to operate:				
-It is not acceptable to delay surgery - operate within 4 weeks from diagnosis	50.0%	47.5%	52.5%	
-It is acceptable to delay surgery for up to 8 weeks from diagnosis	45.0%	55.0%	45.0%	
-It is not acceptable to delay treatment – initiate alternative treatment (eg, RT) immediately, instead of surgery	-	20.0%	80.0%	
-It is acceptable to delay surgery for up to 12 weeks from diagnosis	5.0%			
b. If surgery is <b>NOT ANTICIPATED</b> to occur within the acceptable time frame above, you would:				
-Initiate alternative treatment (eg, RT) immediately?	40.0%	60.0%	32.5%	67.5%
-Undertake serial monitoring, and only consider surgery or alternative therapies urgently if tumour progresses?	60.0%	40.0%	77.5%	22.5%
-Consider palliative treatment as only treatment?	0.0%	100.0%		
c. If a delay to surgery of <b>4-8 weeks</b> is anticipated, you would:				
-Treat with primary RT immediately, instead of surgery?			17.5%	82.5%
-Undertake serial monitoring, and only consider surgery or alternative therapies urgently if tumour progresses significantly?			87.5%	12.5%
d. If a delay to surgery of <b>more than 8 weeks</b> is anticipated, you would:				
-Treat with primary RT immediately, instead of surgery?			45.0%	55.0%
-Undertake serial monitoring, and only consider surgery or alternative therapies urgently if tumour progresses significantly?			67.5%	32.5%
<b>Q2. In the case of an early T1N0 laryngeal cancer:</b>				
a. Acceptable delay to operate:				
-It is not acceptable to delay treatment – initiate alternative treatment (eg, RT) immediately, instead of surgery	52.5%	70.0%	30.0%	
-It is not acceptable to delay surgery - operate within 4 weeks from diagnosis	17.5%	27.5%	72.5%	
-It is acceptable to delay surgery for up to 8 weeks from diagnosis	22.5%	47.5%	52.5%	
-It is acceptable to delay surgery for up to 12 weeks from diagnosis	7.5%			
b. If surgery is <b>NOT ANTICIPATED</b> to occur within the acceptable time frame above, you would:				
-Initiate alternative treatment (eg, RT) immediately?	68.2%	31.8%	100.0%	0.0%
-Undertake serial monitoring, and only consider surgery or alternative therapies urgently if tumour progresses?	31.8%	68.2%	25.0%	75.0%
-Consider palliative treatment as only treatment?	0.0%	100.0%		
c. If a delay to surgery of <b>4-8 weeks</b> is anticipated, would you treat with primary RT immediately, instead of surgery?				
			67.5%	32.5%
			Yes	No

d. If a delay to surgery of **more than 8 weeks** is anticipated, would you treat with primary RT immediately, instead of surgery?

92.5%	7.5%
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**Q3. In the case of advanced head and neck cancer which will require prolonged operative time, prolonged hospital stay, and/or intensive care (eg, T4 N1 laryngeal cancer, T3N2b oral cancer, or a case requiring bone resection such as maxillectomy):**

a. Acceptable delay to operate:

	%	%
-It is not acceptable to delay surgery - operate within 4 weeks from diagnosis	77.5%	87.5%
-It is acceptable to delay surgery for up to 8 weeks from diagnosis	17.5%	12.5%
-It is acceptable to delay surgery for up to 12 weeks from diagnosis	5.0%	

b. If surgery is **NOT ANTICIPATED** to occur within the acceptable time frame above, you would:

	Yes	No	Yes	No
-Initiate alternative treatment (eg, RT/CRT) immediately?	53.4%	46.6%	90.0%	10.0%
-Give induction (metronomic) chemotherapy until surgery is possible?	29.3%	70.7%	50.0%	50.0%
-Undertake serial monitoring, and only consider surgery or alternative therapies urgently if tumour progresses?	13.8%	86.2%		
-Consider palliative treatment as only treatment?	3.4%	96.6%		

c. If a delay to surgery of **4-8 weeks** is anticipated, you would:

	Yes	No
-Treat with primary RT/CRT instead of surgery?	62.5%	37.5%
-Give induction (metronomic) chemotherapy until surgery is possible?	52.5%	47.5%

d. If a delay to surgery of **more than 8 weeks** is anticipated, you would:

	Yes	No
-Treat with primary RT/CRT instead of surgery?	82.5%	17.5%
-Give induction (metronomic) chemotherapy until surgery is possible?	45.0%	55.0%

**Q4. In the case of differentiated thyroid cancer (T1-3, N0-1b) with no adverse features (no extension into strap muscles, trachea, or oesophageal musculature, no critical airway compression, and no imminent risk to, or involvement of, the recurrent laryngeal nerve):**

a. Acceptable delay to operate:

	%	Yes	No
-It is acceptable to delay surgery for up to 12 weeks from diagnosis	42.5%	82.5%	17.5%
-It is acceptable to delay surgery for up to 18 weeks from diagnosis	15.0%	30.0%	70.0%
-It is acceptable to delay surgery for up to 24 weeks from diagnosis	22.5%	22.5%	77.5%
-It is acceptable to delay surgery indefinitely (serial monitoring until progression)	20.0%	22.5%	77.5%

b. If surgery is **NOT ANTICIPATED** to occur within the acceptable time frame above, you would:

	Yes	No
-Consider alternative treatment (eg radioiodine/RT) immediately?	3.2%	96.8%
-Consider palliative treatment as only treatment?	0.0%	100.0%
-Undertake serial monitoring, and only consider surgery if tumour progresses?	96.8%	3.2%

**Q5. In the case of T1-2 differentiated thyroid cancer <4cm, which of the following features should be considered as indication to operate within 4 weeks?**

	Yes	No	Yes	No	Yes	No
-Gross extrathyroidal extension invading only strap muscles	32.5%	67.5%	37.5%	62.5%	15.0%	85.0%
-Posterior nodule in the tracheoesophageal groove	42.5%	57.5%	60.0%	40.0%	60.0%	40.0%
-Nodules directly abutting the airway, but not invading it	65.0%	35.0%	75.0%	25.0%	82.5%	17.5%
-Regional lymph nodal metastases	27.5%	72.5%	27.5%	72.5%	7.5%	92.5%

**Q6. There are some procedures that result in higher risk of complications or prolonged hospital stay. These questions below try to strike a balance between maintaining standard of care versus delays or alterations in treatment. Thus, in these scenarios, would you consider the following:**

	Yes	No	Yes	No	Yes	No
-Accept a <b>REDUCED</b> level of post operative monitoring (eg, no intensive care bed or step down unit) than you would usually use for such a case (eg, for a free flap or a patient with significant morbidity)?	62.5%	37.5%	70.0%	30.0%	65.0%	35.0%
- <b>AVOID</b> a neck dissection or sentinel node biopsy in a radiologically N0 neck in a case of cutaneous melanoma?	40.0%	60.0%	40.0%	60.0%	35.0%	65.0%
-Do <b>sentinel node biopsy</b> instead of elective neck dissection for T1/2 oral cancer or melanoma?	42.5%	57.5%	50.0%	50.0%	45.0%	55.0%
- <b>AVOID</b> a tracheostomy in an advanced T2/3 oral cancer requiring free flap?	35.0%	65.0%	32.5%	67.5%	25.0%	75.0%
- <b>AVOID</b> primary free flap reconstruction and instead perform local or pedicled flap?	62.5%	37.5%	70.0%	30.0%	72.5%	27.5%
- <b>AVOID</b> a tracheostomy in an oropharyngeal cancer undergoing transoral surgery?	70.0%	30.0%	87.5%	12.5%		
- <b>AVOID</b> primary free flap reconstruction and instead perform delayed reconstruction at a later date?	27.5%	72.5%	20.0%	80.0%		
- <b>AVOID</b> salvage surgery?	30.0%	70.0%	12.5%	87.5%		
- <b>AVOID</b> a neck dissection or sentinel node biopsy in a radiologically N0 neck at risk of occult metastasis in a T1-2 oral or oropharyngeal cancer (eg, T2 N0 oral cancer with 7 mm depth)?	25.0%	75.0%	15.0%	85.0%		
-Only experienced senior surgeons to operate on patients?	62.5%	37.5%	80.0%	20.0%		
- <b>AVOID</b> a neck dissection or sentinel node biopsy in a radiologically N0 neck in a T3-4 cancer oral or oropharyngeal cancer?	7.5%	92.5%				

**Q7. When surgery is delayed due to resource constraints from the COVID-19 pandemic:**

-Serial monitoring should be used to assess for tumour progression while awaiting definitive treatment?  
 -Evidence of tumour progression should prompt re-evaluation of treatment options and/or re-prioritisation?

Yes	No
92.5%	7.5%
100.0%	0.0%

**Q8. In a severely constrained setting:**

a. Would you change your indications for palliative care as the only treatment for a primary tumor?

Yes	No	Yes	No
45.0%	55.0%	47.5%	52.5%

b. What would be your indications for palliative care as the only treatment?

-Patients with low cure rate (eg, below 20% five year survival)?  
 -Patients with advanced biological age (eg, >85 years) who have advanced stage disease?  
 -Patients with poor functional status (e.g. spends >50% of the day in bed) or Performance Status 3?

Yes	No	Yes	No
55.0%	45.0%	60.0%	40.0%
77.5%	22.5%	92.5%	7.5%
82.5%	17.5%		

**PART 3**

**Patient prioritisation in the context of increased SARS-CoV-2 virus prevalence**

	1st round	2nd round	3rd round
<b>Q1. How would you prioritise the following cases in terms of timing of operations- ie which would you operate on first ?</b>			
	Rank (R1)	Rank (R2)	Rank (R2)
	Average aggregated scores (R1)	Average aggregated scores (R2)	
-T3 N2 oral cancer	1	1	1
-T4 N1 laryngeal cancer	2	2	2
-T4 N0 maxillary cancer	3	3	3
-T4a N1 papillary thyroid cancer with tracheal invasion	4	4	4
-T3 N1 carcinoma ex-pleomorphic parotid cancer	5	5	5
-T1/2 N0 oral cancer	6	6	6
-T2 N1 oropharyngeal cancer p16(-)	7	7	7
-T2 N1 oropharyngeal cancer p16(+)	8	8	8
-T0 N1 unknown primary	9	9	9
-T2 N0 adenoid cystic oral cavity	10	10	10
-T1 N0 laryngeal cancer	11	11	11
-T2 N0 papillary thyroid cancer with a posterior nodule	12	12	12

**Q2. In the first round, these were the most commonly selected factors affecting prioritisation of surgery in the setting of the COVID-19 pandemic. Please rank these factors according to your current preferences**

-Chance of progression with delay (risk to patient)  
 -Patient COVID-19 status (risk to patients and staff)  
 -Prognosis (risk to patient)  
 -Availability of infrastructure to operate on COVID-19+ patients, including personal protective equipment and trained staff, etc. (risk to patients and staff)  
 -Effectiveness and availability of alternative treatments (risk to patient)  
 -Intensive care bed availability (resource utilisation)  
 -Severity of symptoms (patient experience)  
 -Risk of inadvertent SARS-CoV-2 transmission (risk to staff)  
 -Post-operative recovery time in hospital (resource utilisation)  
 -Duration of operation (resource utilisation)

% chosen (R1)	Rank (R2)	Average aggregated scores (R2)
65.0	1	4.5
62.5	2	3.9
42.5	3	2.7
42.5	4	2.3
32.5	5	1.6

FNE=flexible nasendoscopy. PPE=personal protective equipment. RT=radiotherapy