

# Speeding up head and neck cancer assessment and treatment initiation: what can we do?

Daniel J Taylor, MRes (Fifth year medical student), Shadaba Ahmed, FRCS-ORL/HNS

## INTRODUCTION

The COVID-19 pandemic continues to have a profound effect on surgical wait times, with over 6.4 million patients currently waiting for consultant-led care.<sup>1</sup> A patient cohort for whom lengthy wait times are of particular concern is those referred with suspected cancer. Once referred, these patients should be seen by a specialist within 14 days, have cancer ruled in or out within 28 days and commence treatment within 62 days.<sup>2</sup> In December 2021, only 67% of patients with cancer referred under the urgent pathway received treatment within 62 days. This figure may also be set to worsen, as many patients did not access NHS services during the course of the pandemic, between 240,000 – 740,000 patients requiring urgent cancer referral are estimated to have not yet presented to primary care.<sup>3</sup> To combat this unprecedented increase in wait times, in February, 2022 the NHS published its 'Delivery plan for tackling the COVID-19 backlog of elective care'.<sup>4</sup> Specifically for cancer patients, this included goals to increase diagnostic capacity, improve local awareness of cancer symptoms and expand some screening campaigns, with ambitions to improve the proportion of patients for which cancer is ruled in or out within 28 days. However, while this document represents a commendable effort to improve the care of all urgently referred NHS patients, its roadmap to recovery falls short of addressing some of the unique requirements from evaluation of certain cancers, such as those of the head and neck.

Head and neck cancer (HNC) is the sixth most common cancer globally and despite recent advancements in diagnosis and management strategies, long-term prognosis remains poor, with five-year survival rates ranging from 28% – 67%, depending on cancer type.<sup>5</sup> As both functional outcomes and survival for HNC are negatively affected by prolonged wait times,<sup>6,7</sup> timely assessment, diagnosis and treatment initiation are all crucial for effective patient management. The traditional patient assessment involves a thorough history and clinical examination which may include flexible trans-nasal endoscopy. Beyond this, patients may require ultrasound investigation with fine needle aspiration (FNA) or core biopsy, operating room biopsy and a combination of magnetic resonance and computed tomography imaging. This multidisciplinary pathway requires input from various healthcare professionals just to reach a diagnosis, including, but not limited to, ear, nose, and throat (ENT) surgeons, pathologists, sonographers, and radiographers. At every stage of this diagnostic process is the potential to introduce delays and prolong patient wait

time. In response, some centres have adopted 'one-stop' clinics, in which patients receive an initial assessment, endoscopy and ultrasound examination +/- FNA or core biopsy all on the first day of specialist assessment. However, one stop clinics are not standard practice, and many continue to be disrupted by the COVID-19 pandemic.

As is the case for many hospital trusts, HNC represents a significant workload for cancer services at University Hospitals of Morecambe Bay (UHMB). Prior to the pandemic, UHMB received 15,550 urgent referrals for suspected cancer annually (2018/19 financial year), of which 1185 (7.6%) were for suspected HNC. The most recent data (2021/22 financial year) has shown a universal increase in urgently referred patients (n = 21,047), with a disproportionate increase in patients referred for suspected HNC (n = 1938, representing 9.2% of all urgent referrals) (table 1). Of these patients referred to HNC services within the most recent year, 84% had cancer ruled in or out within 28 days, which is higher than the Trust average of 79% across all specialties. However, only 41% of HNC patients received treatment initiation within 62 days, compared with the Trust average of 61%.

As streamlining the patient journey for those urgently referred with suspected HNC may improve both patient outcomes and the ability of ENT departments to cope with the increasing demand on surgical services left in the wake of the COVID-19 pandemic, it follows that interventions targeted at doing so may be of value. The aim of this scoping review was, therefore, to assess current evidence for interventions aimed at reducing wait time from initial referral to either diagnosis or initiation of treatment for patients urgently referred to ENT services with suspected HNC.

## METHODS

A literature search was conducted in May 2022 covering the following databases: Medline Complete, AMED and CINAHL (search terms detailed in appendix). To retain relevance for current best practice guidelines, only articles published within the last ten years were considered. Articles which did not assess intervention efficacy against routine standards of care were also excluded. A title and abstract review of the search results was undertaken, with a subsequent full article review of potentially relevant results. Ethical approval was not required as no original research was conducted.

Year	Total Urgent Referrals	HNC Urgent Referrals	Proportion of Referrals for HNC
2016/17	12 725	1069	8.4%
2017/18	12 622	1050	8.3%
2018/19	15 550	1185	7.6%
2019/20	16 677	1385	8.3%
2020/21	15 720	1543	9.8%
2021/22	21 047	1938	9.2%

UHMB, University Hospitals of Morecambe Bay; HNC, Head and neck cancer

Table 1: Summary of UHMB referrals for HNC services.

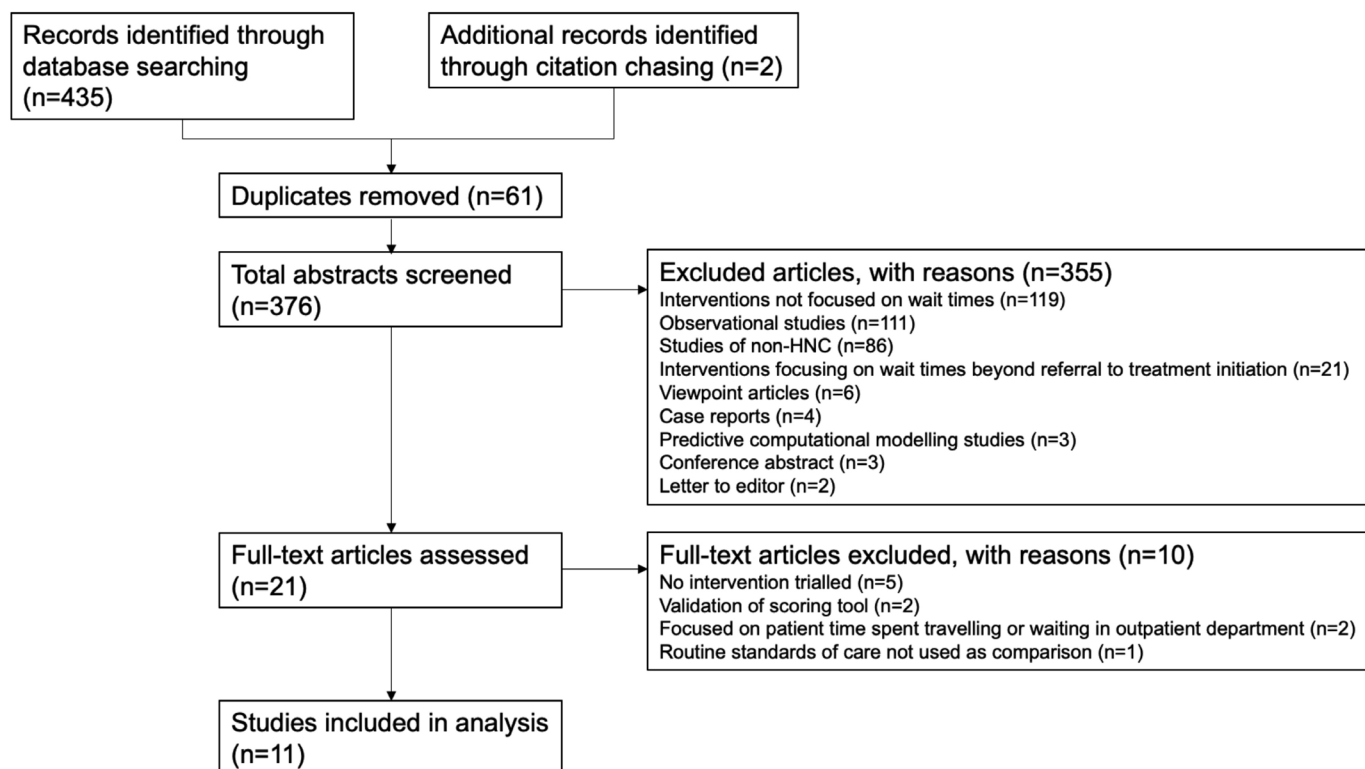


Figure 1: Flow diagram demonstrating article exclusions. HNC, head and neck cancer.

## RESULTS

The literature search returned 435 results, of which 374 were unique. Title and abstract screening removed 355 articles. The most common reasons for exclusion at this stage were articles investigating HNC management strategies that did not use reduction in wait time from initial referral to either diagnosis or initiation of treatment as a primary outcome (n=119) and observational studies of delays in HNC investigation or management (n=111). Nineteen full articles were assessed, of which ten were excluded. Of these exclusions, five articles did not trial any intervention, two validated a scoring tool without using this as an intervention for reducing wait time, two focused on patient delay not affecting time to either diagnosis or treatment initiation (e.g., time spent in waiting room before seeing consultant) and one did not use routine standards of care as a comparison. An additional two articles were identified through citation chasing, thus leaving eleven articles included in the final review (figure 1). Three key themes emerged from the literature search: in-office biopsy, incorporation of associate healthcare practitioners and streamlining of services; these will be presented sequentially.

## IN-OFFICE BIOPSY

The most common intervention for reducing wait time to initiation of treatment was in-office biopsy of suspicious lesions, which can be performed with local anaesthetic in an outpatient setting, thus eliminating the need to wait for an available theatre slot before a biopsy can be obtained. Five studies examined the effects of in-office biopsy versus operating room biopsy, including lesions from the oropharynx, larynx<sup>8</sup> and laryngopharynx<sup>8-12</sup> from a total of 1259 patients. In-office biopsy universally reduced time to diagnosis, with

mean wait times ranging from 2.0 – 7.5 days and 9.0 – 23.0 days for in-office biopsy and operating room biopsy respectively. In three studies, in-office biopsy also reduced time to treatment initiation (21.0 – 27.0 days) versus operating room biopsy (34.0 – 48.8 days).<sup>8-10</sup> One study<sup>11</sup> reported a modest difference in time to treatment initiation between the two biopsy modalities, despite in-office biopsy significantly reducing the time to diagnosis (table 2). The authors did however suggest referral bias and other system factors may have confounded this result. It should also be noted that the study by Schutte et al.<sup>10</sup> introduced in-office biopsy alongside several other interventions aimed at streamlining HNC services and so their observed reduction in time to diagnosis and treatment initiation cannot solely be attributed to in-office biopsy. As secondary findings, in-office biopsy was also shown to be well tolerated by patients,<sup>8</sup> with minimal complications<sup>12</sup> and cost savings of 10.7% compared with operating room biopsy.<sup>9</sup> Additionally, a further study was identified which used an economic model to suggest that in-office biopsy of the oral cavity and larynx conferred a reduction in time to treatment initiation of 17 days.<sup>13</sup>

## ASSOCIATE HEALTHCARE PRACTITIONERS

Two studies investigated the feasibility of associate healthcare practitioners covering some of the roles traditionally performed by consultant surgeons.<sup>14,15</sup> For both studies, time savings were commented upon, but absolute savings from patient referral to either diagnosis or initiation of treatment were not reported. The earlier study<sup>14</sup> assigned an advanced nurse practitioner and physician assistant, both with significant experience in common otolaryngologic conditions and endoscopic examination, to assist a head and neck surgeon with their HNC caseload. With the help of these practitioners, the surgeon

Study	Patients (n)	Reduction in time to diagnosis (days)	P value	Reduction in time to treatment (days)	P value
Lippert <sup>8</sup>	116	–	–	24.6	–
Schutte <sup>9</sup>	188	14.0	<0.0001	14.5	<0.0001
Schutte <sup>10</sup>	486	7.0	<0.0001	13.0	<0.0001
Lee <sup>11</sup>	114	15.5	<0.0001	2.1	–
Cohen <sup>12</sup>	355	'3-4 weeks'	–	–	–

All time periods represent reduction in time conferred by in-office biopsy versus operating room biopsy, missing values not reported in original studies.

Table 2: Summary of in-office biopsy studies.

was able to see more new patients (44 versus 60 per month,  $p < 0.001$ ) and had less overbooked hours (43 versus 35 hours per month,  $p < 0.001$ ), while patient satisfaction remained stable. A second study trialled a nurse-led clinic for trans-nasal endoscopic examination in urgently referred patients classified as low-risk by a previously validated triage scoring system.<sup>15</sup> Examinations were recorded and subsequently reviewed by a consultant head and neck surgeon. A total of 155 patients were reviewed under this pathway, which eased pressure on consultant-led two week wait clinics, allowing all high-risk patients to have a face-to-face appointment within five days of receiving a referral. No patients discharged from the nurse-led pathway were re-referred within three months and only one patient received a positive cancer diagnosis. In contrast, before implementation of this nurse-led pathway, urgently referred patients waited a mean of 14 days for a face-to-face appointment.

### STREAMLINING OF SERVICES

Three studies evaluated interventions for improving coordination of multidisciplinary care.<sup>10, 16, 17</sup> The largest of these interventions redesigned the entire diagnostic pathway for all patients referred with suspected HNC,<sup>10</sup> with 457 and 394 patients receiving optimised workup and standard care respectively. The new, optimised pathway spanned three days, in which patients received consultations from various specialists, trans-nasal endoscopy +/- in-office biopsy, advanced imaging, histology results and multidisciplinary team discussion. Compared with standard care, the optimised pathway significantly reduced time from initial consultation to diagnosis (9 versus 2 days,  $p < 0.0001$ ) and initial consultation to treatment initiation (34 versus 21 days,  $p < 0.0001$ ). Furthermore, the optimised pathway conferred a 12% increase in 3-year overall survival ( $p = 0.002$ ) The second study also streamlined the diagnostic pathway, this time with all investigations conducted within four days excluding histology results.<sup>16</sup> Results for the new diagnostic pathway were recorded during 2007–2008 and 2011–2012. For standard care, the mean time from first consultation to diagnosis was 16 days, compared with six days during 2007–2008 and nine days during 2011–2012, both of which represent a statistically significant reduction ( $p < 0.001$  and  $p = 0.02$  respectively). The final intervention for streamlining services introduced a proforma for prioritising cervical lymph node biopsy requests.<sup>17</sup> The proforma was used in 29% of all referrals. When used, median wait time for biopsy was eight days (interquartile range 7 – 18), compared with 18 days (interquartile range 7 – 27 days) when the proforma

was not used. The statistical significance of this difference was not reported.

### DISCUSSION

This review summarises current evidence for interventions aimed at reducing wait time from initial referral to either diagnosis or initiation of treatment for patients urgently referred to ENT services with suspected HNC. The importance of the time delays in diagnosis and initiation of treatment of HNC should not be underestimated; they are often aggressive, fast-growing tumours, with prolonged time to initiation of treatment shown to affect disease progression<sup>6, 18</sup> and patient survival.<sup>19, 20</sup>

Most studies focused on in-office biopsy as an alternative to operating room biopsy. These studies benefitted from large sample sizes, with data available for over 1250 patients across the five included studies.<sup>8-12</sup> Alongside quantifying time savings, the studies demonstrated the procedure can be performed safely and is well tolerated by patients. Compared with operating room biopsy, in-office biopsy produced a universal reduction in time to diagnosis, with time savings ranging from 7.0 – 15.5 days.<sup>10, 11</sup> There was a greater spread in time savings to initiation of treatment, ranging from 2.1 – 24.6 days,<sup>8, 11</sup> but factors such as referral bias may have confounded the lower of these results. These studies therefore demonstrate that while in-office biopsy may be used to reduce patient wait times, implementation must be delivered alongside reform that addresses some of the systems factors which act as a barrier to realising the time savings it may offer.

Assigning further roles to associate healthcare practitioners in support of two week wait services may also ease some of the current pressures. Both studies utilised associate practitioner-led endoscopy, and while neither quantified changes in time to either diagnosis or initiation of treatment, both demonstrated benefits which may translate into reductions of these metrics. Furthermore, a recent scoping study has suggested speech and language therapists would be able to improve the quality and efficiency of services for urgently referred patients, but identified issues such as prescribing rights, indemnity and governance as current barriers to effective implementation.<sup>21</sup> The wider implications of interventions that re-deploy staff to HNC services should also be considered, with none of the reported studies quantifying knock-on negative effects to other services such as routine ENT outpatient clinics.

Three studies also focused on streamlining the diagnostic pathway for patients, two of which reported reductions in time to diagnosis of at least one week and time to treatment

# Speeding up head and neck cancer assessment and treatment initiation: what can we do?

Daniel Taylor, Shadaba Ahmed

initiation of 13.0 days.<sup>10,16</sup> These results therefore suggest improved co-ordination of the multidisciplinary care required in HNC management, such as 'one-stop' clinics, may improve wait times. However, compared with most 'one stop' clinics, these interventions provided a more complete package of care, including imaging, anaesthetic and frailty assessments and histology results and this should be considered when interpreting these results. Departments should also be aware of reasons why changes in service delivery may not have the desired effect. Two studies demonstrated that while an intervention has potential to reduce wait times, departmental factors<sup>11</sup> and poor clinician adherence to new systems<sup>17</sup> may blunt the potential benefits they offer.

In conclusion, this review has presented evidence to suggest that, for patients urgently referred to ENT, time to diagnosis and treatment initiation may improve through use of in-office biopsy, utilisation of associate healthcare practitioners and a streamlined pathway for service provision. These interventions may improve patient prognosis and could help ENT services to clear the current backlog of patients waiting for surgery, but careful implementation is needed for successful delivery.

## Correspondence to:

Daniel James Taylor, Lancaster Medical School,  
Lancaster University, Lancaster LA1 4YW  
d.j.taylor@lancaster.ac.uk

## REFERENCES

1. NHS England. Consultant-led referral to treatment waiting times data 2021-22. 2022. Available from: <https://www.england.nhs.uk/statistics/statistical-work-areas/rtt-waiting-times/rtt-data-2021-22/> (accessed on 30 April 2022).
2. NHS England. Cancer waiting times. 2022. Available from: <https://www.england.nhs.uk/statistics/statistical-work-areas/cancer-waiting-times/> (accessed on 30 April 2022).
3. House of Commons Committee of Public Accounts. NHS backlogs and waiting times in England. 2022. Available from: [https://www.england.nhs.uk/coronavirus/publication/delivery-plan-for-tackling-the-covid-19-backlog-of-elective-care/](https://committees.parliament.uk/publications/9266/documents/160332/default/#:~:text=Before%20the%20pandemic%20only%2083,did%20so%20in%20February%202022,(accessed on 30 April 2022).</a></li><li>4. NHS. Delivery plan for tackling the COVID-19 backlog of elective care. 2022. Available from: <a href=) (accessed on 30 April 2022).
5. Cancer Research UK. Head and neck cancers statistics. Available from: <https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/head-and-neck-cancers#heading-Two> (accessed on 30 April 2022).
6. Jensen AR, Nellesmann HM, Overgaard J. Tumor progression in waiting time for radiotherapy in head and neck cancer. *Radiother Oncol.* 2007;84(1):5-10. Available from: <https://doi.org/10.1016/j.radonc.2007.04.001>
7. Polesel J, Furlan C, Birri S, et al. The impact of time to treatment initiation on survival from head and neck cancer in north-eastern Italy. *Oral Oncol.* 2017;67:175-82. Available from: <https://doi.org/10.1016/j.oraloncology.2017.02.009>
8. Lippert D, Hoffman MR, Dang P, McCulloch TM, Hartig GK, Dailey SH. In-office biopsy of upper airway lesions: Safety, tolerance, and effect on time to treatment. *Laryngoscope* 2015;125(4):919-23. Available from: <https://doi.org/10.1002/lary.25007>
9. Schutte HW, Takes RP, Slootweg PJ, et al. Digital video laryngoscopy and flexible endoscopic biopsies as an alternative diagnostic workup in laryngopharyngeal cancer: A prospective clinical study. *Ann Otol Rhinol Laryngol.* 2018;127(11):770-6. Available from: <https://doi.org/10.1177/0003489418793987>
10. Schutte HW, van den Broek GB, Steens SCA, et al. Impact of optimizing diagnostic workup and reducing the time to treatment in head and neck cancer. *Cancer* 2020;126(17):3982-90. Available from: <https://doi.org/10.1002/cncr.33037>
11. Lee F, Smith KA, Chandarana S, et al. An evaluation of in-office flexible fiber-optic biopsies for laryngopharyngeal lesions. *J Otolaryngol Head Neck Surg.* 2018;47(1):31. Available from: <https://doi.org/10.1186/s40463-018-0275-x>
12. Cohen JT, Bishara T, Trushin V, Benyamini L. Adverse events and time to diagnosis of in-office laryngeal biopsy procedures. *Otolaryngol Head Neck Surg.* 2018;159(1):97-101. Available from: <https://doi.org/10.1177/0194599818764412>
13. Simons PA, Ramaekers B, Hoebers F, et al. Cost-effectiveness of reduced waiting time for head and neck cancer patients due to a lean process redesign. *Value Health.* 2015;18(5):587-96. Available from: <https://doi.org/10.1016/j.jval.2015.04.003>
14. Paydarfar JA, Gosselin BJ, Tietz AM. Improving access to head and neck cancer surgical services through the incorporation of associate providers. *Otolaryngol Head Neck Surg.* 2016;155(5):723-8. Available from: <https://doi.org/10.1177/0194599816647945>
15. Metcalfe C, Dogan M, Glazzard N, Ross E, George A. Introduction of a novel telescopic pathway to streamline 2-week-wait suspected head and neck cancer referrals and improve efficiency: A prospective service evaluation. *Laryngoscope Investig Otolaryngol.* 2021;7(1):117-24. Available from: <https://doi.org/10.1002/lio.2721>
16. Sorensen JR, Johansen J, Gano L, et al. A "package solution" fast track program can reduce the diagnostic waiting time in head and neck cancer. *Eur Arch Otorhinolaryngol.* 2014;271(5):1163-70. Available from: <https://doi.org/10.1007/s00405-013-2584-z>
17. Dimbleby G, Golding L, Al Hamarneh O, Ahmad I. Cutting cancer waiting times: streamlining cervical lymph node biopsy. *J Laryngol Otol.* 2013;127(10):1007-11. Available from: <https://doi.org/10.1017/S0022215113002004>
18. Waaijer A, Terhaard CH, Dehnad H, et al. Waiting times for radiotherapy: consequences of volume increase for the TCP in oropharyngeal carcinoma. *Radiother Oncol.* 2003;66(3):271-6. Available from: [https://doi.org/10.1016/s0167-8140\(03\)00036-7](https://doi.org/10.1016/s0167-8140(03)00036-7).
19. Murphy CT, Galloway TJ, Handorf EA, et al. Survival impact of increasing time to treatment initiation for patients with head and neck cancer in the United States. *J Clin Oncol.* 2016;34(2):169-78. Available from: <https://doi.org/10.1200/JCO.2015.61.5906>.
20. van Harten MC, Hoebers FJP, Kross KW, van Werkhoven ED, van den Brekel MWM, van Dijk BAC. Determinants of treatment waiting times for head and neck cancer in the Netherlands and their relation to survival. *Oral Oncology.* 2015;51(3):272-8. Available from: <https://doi.org/10.1016/j.oraloncology.2014.12.00>
21. Occomore-Kent LC, Hatch E, Cruice M. Scoping opinion: Speech and language therapists' views on extending their role to the urgent ear, nose and throat pathway. *Int J Lang Commun Disord.* 2021. Available from: <https://doi.org/10.1111/1460-6984.12650>