

## Main Article

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# Impact of coronavirus disease 2019 on head and neck urgent suspected cancer referral pathways in rural Wales

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## Abstract

**Objective.** To assess the impact of the coronavirus disease 2019 pandemic on head and neck urgent suspected cancer referral pathways in rural areas of Wales.

**Method.** A retrospective audit was conducted of 2234 head and neck urgent suspected cancer referrals received from January 2019 to November 2020.

**Results.** The referrals dropped by 35 per cent in 2020 compared to the same period in 2019. The time from general practitioner referral to the first ENT appointment improved during the pandemic (8.0 vs 10.0 days;  $p < 0.001$ ). Of referrals, 92.1 per cent were seen within a 14-day period in 2020, compared with 79.6 per cent in 2019 ( $p < 0.001$ ). There were no differences between 2020 and 2019 in terms of: the (confirmed cancer) conversion rate (10.6 per cent vs 9.7 per cent;  $p = 0.60$ ), general practitioner referral to multidisciplinary team discussion time (35.5 vs 41.5 days;  $p = 0.40$ ) or general practitioner referral to initiation of treatment time (68.0 vs 78.0 days;  $p = 0.16$ ).

**Conclusion.** Whilst coronavirus disease 2019 reduced the number of overall head and neck urgent suspected cancer referrals, the pathways were generally unchanged, if not slightly improved, in rural Wales.

## Introduction

In common with healthcare providers worldwide, the UK National Health Service (NHS) was faced with unprecedented challenges by the coronavirus disease 2019 (Covid-19) pandemic. One important measure to free up beds and redeploy staff to critical services was to cancel elective procedures, and limit operations and out-patient clinic appointments to cancer and emergency cases, from mid-March 2020 onwards.<sup>1</sup> As a result, a prospective case series conducted during the early phase of the pandemic on urgent referrals to secondary care otolaryngology in the UK showed a 93 per cent drop in referrals from the accident and emergency department (A&E) and an 89 per cent drop in referrals from primary care over a seven-week study period.<sup>2</sup> In the Netherlands, an overall decrease in referrals from general practitioners and national screening programmes was reported, with a subsequent decrease in surgical procedures for breast cancer management.<sup>3</sup> Worldwide, patients were deprived of surgical management, with uncertain losses of function and adverse prognoses.<sup>4</sup> Subsequently, NHS England Statistics showed that, in December 2020, 224 205 patients were waiting over 52 weeks for treatment in England, compared to 1467 patients in December 2019.<sup>5</sup>

Furthermore, healthcare inequities between those living in urban and rural areas, which were present even before the pandemic, were further exposed and made more palpable during coronavirus times. The Nuffield Trust Report published in December 2020 showed longer waiting times for the treatment of patients in rural and remote trusts than for patients in hospitals within urban areas in England.<sup>6</sup> For example, the proportion of patients waiting for their first consultant appointment for cancer fell by 66 per cent in rural areas in April 2020 compared to April 2019, but the decrease was only 59 per cent in urban areas. Emergency admissions from April to June 2020 fell by 57 per cent in rural areas compared to a year prior, whereas they fell by 45 per cent in urban areas.

This study aimed to evaluate the impact of Covid-19 and its measures on head and neck urgent suspected cancer referral pathways in rural district general hospitals in south-west Wales. Whilst we anticipated that the Covid-19 pandemic would have reduced most secondary care services and capacities in general, we wanted to establish how the waiting times for patients needing to see a head and neck cancer specialist, for a definitive diagnosis and for initiation of treatment, were affected.

## Materials and methods

A retrospective case review was conducted of all patients referred to the ENT clinic as urgent suspected cancer cases, from April to November, in the years 2020 and 2019. A huge majority of the referrals came from primary care, but a few were referred by other specialists as in-patients or whilst attending A&E.

Paper and electronic triage referral data were requested from the Hywel Dda's Cancer Services Unit, and were provided with the help of the information technology department. Electronic medical records were reviewed, and data extracted following approval from the Audit Department of Hywel Dda University Health Board. The specific data collected were: patient demographics (age, gender), waiting time from general practitioner referral to first ENT appointment, waiting time from general practitioner referral to head and neck multi-disciplinary team (MDT) discussion, waiting time from general practitioner referral to treatment initiation, outcome of first and second clinic appointments, and clinical diagnosis.

The Hywel Dda University Health Board caters to a population of 390 000, covering an area of 5782 km<sup>2</sup> (which is a quarter of the land mass in Wales), representing a population density of 67 people/km.<sup>2,7,8</sup> It has 4 district general hospitals, 5 community hospitals, 2 integrated care centres and 48 general practice surgeries.<sup>9</sup> ENT clinics are held in all four district general hospitals. Surgical operations and emergencies are performed at Glangwili General Hospital in Carmarthen because of geographical considerations, and the availability of paediatric and intensive care units in this centre. During the first lockdown, the ENT service was concentrated at Glangwili General Hospital; since August 2020, a few more clinics have been restarted in the peripheral hospitals.

Even before the pandemic, part of the head and neck service was triaging all urgent suspected cancer referrals before face-to-face consultation, and this has led to either upgrading or downgrading of the urgent suspected cancer referrals.

## Statistical analysis

When data such as age, and waiting times from general practitioner referral to clinic appointment, to MDT discussion and to treatment initiation, are not normally distributed, median values and a non-parametric test (Wilcoxon rank sum) were used to analyse data. Otherwise, data were analysed using chi-square and *t*-tests, as appropriate. All analyses were conducted using Stata®/IC 16 statistical software.<sup>10</sup>

## Results

### Total urgent suspected cancer referrals

A list containing a total of 2234 head and neck urgent suspected cancer referrals from January 2019 to November 2020, provided by Hywel Dda Cancer Services, was analysed (Figure 1).

In 2019, the average number of monthly urgent suspected cancer referrals was 108, with lower numbers during the summer months and lowest of all in December (57 referrals).

In 2020, the monthly average referral dropped to 86; the year started with a relatively high number of referrals of 134, but the numbers started to decline by February 2020. A significant drop to 33 referrals was noted in April 2020, which coincided with the first lockdown, which had been introduced a month earlier. The referrals started to pick up again in June 2020; this coincided with the easing of national restrictions. There was a shallow dip in August 2020, a phenomenon

similarly seen in August 2019, coinciding with summer holidays; however, instead of a persistent dip until Christmas, the numbers picked up in succeeding months, and eventually slightly exceeded similar months in the previous year. The referrals started to dip again in November 2020, which coincided with the second national lockdown, which had commenced a month earlier.

### Non-coronavirus versus coronavirus period

Considering that there are inherent monthly variations in urgent suspected cancer referrals over a year, which are affected by national holidays, school breaks and regular festivities, we decided to limit the study period to April–November 2020 and compare this with the same period a year prior in 2019.

There were 1558 urgent suspected cancer referrals during these time periods. Of these, 8.9 per cent ( $n = 139$ ) were excluded from the final analysis. This included patients who failed to attend the appointment, referrals that were downgraded to 'urgent' or 'routine' following vetting by ENT consultants, referrals redirected to other specialties, patients who died whilst waiting for a clinic appointment, and patients with no referral letters seen or with incomplete data on the Welsh Clinical Portal system. In total, there were 1419 urgent suspected cancer referrals analysed, comprising 638 males and 781 females, with the age of patients ranging from 6 to 99 years.

As shown in Table 1, there were 862 head and neck urgent suspected cancer referrals, with an average of 108 referral letters a month from April to November 2019; this number decreased to 557 referrals in 2020 during the same months (a drop of 35 per cent), with an average of 70 referral letters per month.

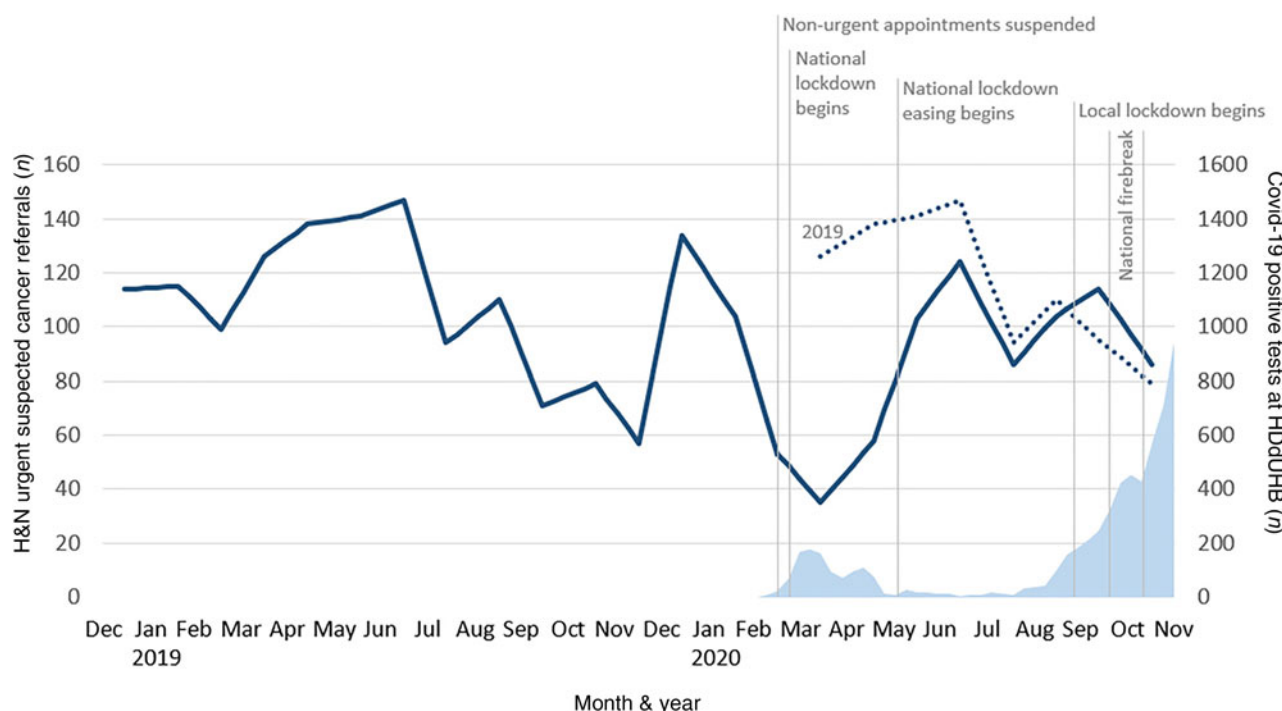
The patients' ages were not normally distributed, hence median and non-parametric tests were used for analysis. The median age of patients referred as head and neck urgent suspected cancer cases in 2019 was 65.0 years, with ages ranging from 3 to 96 years. Among those with confirmed cancer, the median age was higher, at 72.5 years. There was an almost 1:1 male-to-female ratio among those referred as urgent suspected cancer cases, but this increased to 2:1 when only the confirmed cancer patients were considered.

The median age of those referred during the same months in 2020 was 63.0 years. Similar to 2019, there was a 1:1 male-to-female ratio among all urgent suspected cancer referrals and a 2:1 ratio among confirmed cancer cases.

### Conversion rate

The conversion rate refers to the percentage of confirmed cancer cases among urgent suspected cancer referrals.<sup>11</sup> As shown in Table 2, between April to November 2019, 90.3 per cent ( $n = 778$ ) of the head and neck urgent suspected cancer referrals turned out to be benign cases, and 9.7 per cent ( $n = 84$ ) were revealed to be cancer cases following subsequent investigations. For the same months in 2020, 86.7 per cent ( $n = 483$ ) of urgent suspected cancer referrals were found to be benign, with a cancer conversion rate of 10.6 per cent ( $n = 59$ ).

Among the confirmed cancer cases, 6.8 per cent ( $n = 59$ ) and 5.9 per cent ( $n = 33$ ) were head and neck squamous cell carcinoma in 2019 and 2020, respectively. Rates of non-head and neck squamous cell carcinoma, such as lymphoma, thyroid cancer, prostate, chest or oesophageal malignancies, were noted to be 2.9 per cent ( $n = 25$ ) in 2019 and 4.5 per cent ( $n = 25$ ) in 2020.



**Fig. 1.** Monthly head and neck (H&N) urgent suspected cancer referrals received by the ENT department from January 2019 to November 2020. The shaded areas (blue) represent the daily number of coronavirus disease 2019 (Covid-19) positive tests in the area covered by Hywel Dda University Health Board (HDdUHB). (Non-urgent appointments were suspended, and national lockdown due to the Covid-19 pandemic started at the end of March 2020 and was eased off in May. There was a local lockdown in a town in southwest Wales in September 2020, which was followed by a second national lockdown in October 2020.)

**Table 1.** Demographics of urgent suspected cancer referrals during coronavirus versus non-coronavirus months in southwest Wales\*

Parameter	Non-coronavirus period (Apr–Nov 2019)	Coronavirus period (Apr–Nov 2020)	Statistical values
<b>Age (years)</b>			
– All urgent suspected cancer referrals	– Median = 65.0 – IQR = 52 to 75 – Range = 3 to 96	– Median = 63.0 – IQR = 52 to 73 – Range = 6 to 99	$p = 0.046^{\dagger}$
– Confirmed cancer cases	– Median = 72.5 – IQR = 64 to 79 – Range = 23 to 96	– Median = 72.0 – IQR = 58 to 81 – Range = 24 to 99	$p = 0.93^{\dagger}$
<b>Gender</b>			
– All urgent suspected cancer referrals	– M:F ratio = 1:1 – M = 375; F = 487	– M:F ratio = 1:1 – M = 263; F = 294	$p = 0.17$ ; difference in proportion of males = 0.04 (95% CI = 0.02–0.09)
– Confirmed cancer cases	– M:F ratio = 2:1 – M = 54; F = 30	– M:F ratio = 2:1 – M = 43; F = 16	$p = 0.28$ ; difference in proportion of males = 0.09 (95% CI = –0.07–0.24)

\*Referrals received by the ENT – head and neck department during pandemic months of April to November 2020 and compared to the same months in 2019. <sup>†</sup>Wilcoxon rank sum test. Apr = April; Nov = November; IQR = interquartile range; M = male; F = female; CI = confidence interval

### Waiting times

The waiting times (in days), from general practitioner referral to ENT clinic appointment, to MDT discussion and to treatment initiation, were not normally distributed; therefore, median and non-parametric tests were used for analysis.

The median waiting time from general practitioner referral to the first ENT clinic appointment during the non-coronavirus study period in 2019 was 10.0 days, compared with 8.0 days during the coronavirus study period ( $p < 0.001$ ). In 2019, 79.6 per cent of patients referred as urgent suspected cancer cases were seen within 2 weeks; of those in whom cancer was confirmed, 77.4 per cent were seen within 14 days. This rate had improved in 2020, to 92.1 per cent, with a rate of 94.9 per cent among those with confirmed malignancy (Figure 2a, b).

Of those with a confirmed cancer diagnosis, the median waiting time from general practitioner referral to head and neck MDT discussion was 41.5 days in 2019, compared with 35.5 days in 2020 ( $p = 0.40$ ). The median waiting time from general practitioner referral to the initiation of treatment, which can be surgical, chemotherapy, radiotherapy or combination of these modalities, was 78 days in 2019 and 68 days in 2020 ( $p = 0.16$ ) (Figure 2c, d).

### Discharges

Almost three-quarters of the patients referred as urgent suspected cancer cases who were included in this study were reassured and discharged from the ENT clinic following

**Table 2.** Head and neck urgent suspected cancer pathways and outcomes during coronavirus versus non-coronavirus months in southwest Wales\*

Parameter	Non-coronavirus period (Apr–Nov 2019)	Coronavirus period (Apr–Nov 2020)	Statistical values
Total H&N urgent suspected cancer referrals ( <i>n</i> )	862	557	N/A
Average monthly referrals ( <i>n</i> )	108	70	N/A
Benign cases (% ( <i>n</i> ))	90.1 (778)	86.7 (483)	$p = 0.04$ ; difference = $-3.5\%$ (95% CI = $-7.0$ to $-0.1$ )
Malignant cases (% ( <i>n</i> ))	9.7 (84)	10.6 (59)	$p = 0.60$ ; difference = $0.8\%$ (95% CI = $-2.3$ to $4.1$ )
Patients awaiting final diagnosis (% ( <i>n</i> ))	0 (0)	2.7 (15)	N/A
H&N SCC (% ( <i>n</i> ))	6.8 (59)	5.9 (33)	$p = 0.49$ ; difference = $-0.9\%$ (95% CI = $-3.5$ to $1.7$ )
Non-H&N SCC (i.e. lymphoma, or thyroid, skin or lung cancers) (% ( <i>n</i> ))	2.9 (25)	4.5 (25)	$p = 0.11$ ; difference = $1.6\%$ (95% CI = $-0.4$ to $3.6$ )
Time from GP referral to 1st ENT visit (days)			
– All referrals	– Median = 10.0 – IQR = 7.0 to 14.0 – Range = 1 to 52	– Median = 8.0 – IQR = 7.0 to 11.0 – Range = 1 to 96	$p < 0.001^\dagger$
– Confirmed cancer cases	– Median = 9.5 – IQR = 7.0 to 14.0 – Range = 2 to 56	– Median = 8.0 – IQR = 6.0 to 11.0 – Range = 3 to 28	$p < 0.01^\dagger$
Patients seen within 14 days (% ( <i>n</i> ))			
– All referrals	79.6 (686 out of 862)	92.1 (513 out of 557)	$p < 0.001$ ; difference = $12.5\%$ (95% CI = $9.0$ to $16.0$ )
– Confirmed cancer cases (% ( <i>n</i> ))	77.4 (65 out of 84)	94.9 (56 out of 59)	$p < 0.01$ ; difference = $17.5\%$ (95% CI = $7.0$ to $28.1$ )
Patients discharged on 1st visit (% ( <i>n</i> ))	45.6 (393)	43.8 (244)	$p = 0.51$ ; difference = $-1.8\%$ (95% CI = $-7.1$ to $3.5$ )
Patients discharged following investigation or 2nd visit (% ( <i>n</i> ))	23.9 (206)	33 (184)	$p < 0.001$ ; difference = $9.1\%$ (95% CI = $4.3$ to $14.0$ )
Total discharges after 1st & 2nd visits (% ( <i>n</i> ))	69.5 (599)	76.8 (428)	$p < 0.01$ ; difference = $7.3\%$ (95% CI = $2.7$ to $12.0$ )
Time from GP referral to MDT discussion (days) – H&N cases only	– Median = 41.5 – IQR = 31 to 55 – Range = 10 to 130	– Median = 35.5 – IQR = 27 to 53 – Range = 15 to 147	$p = 0.40^\dagger$
Patients discussed in MDT within 31 days of GP referral (%)	28.3	37.5	$p = 0.43$ ; difference = $9.2\%$ (95% CI = $-14.9$ to $32.6$ )
Time from GP referral to treatment (days) – H&N cases only	– Median = 78.0 – IQR = 55 to 94 – Range = 25 to 210	– Median = 68.0 – IQR = 45 to 84 – Range = 20 to 170	$p = 0.16^\dagger$
Patients whose treatment started within 62 days of GP referral (%)	34.8	41.7	$p = 0.57$ ; difference = $6.8\%$ (95% CI = $-17.2$ to $30.1$ )
Acid reflux or globus pharyngeus diagnosis (% ( <i>n</i> ))	14.6 (126)	22.4 (125)	$p < 0.001$ ; difference = $7.8\%$ (95% CI = $3.6$ to $12.0$ )

\*During pandemic months of April to November 2020 and compared to the same months in 2019. <sup>†</sup>Wilcoxon rank sum test. Apr = April; Nov = November; H&N = head and neck; N/A = not applicable; CI = confidence interval; SCC = squamous cell carcinoma; GP = general practitioner; IQR = interquartile range

assessment and investigations or a second visit. In 2019, 45.6 per cent ( $n = 393$ ) were discharged on the first visit and a further 23.9 per cent ( $n = 206$ ) were discharged following investigations. In 2020, 43.8 per cent ( $n = 244$ ) were reassured on the first visit and a further 33 per cent ( $n = 184$ ) were discharged on a subsequent visit and based on investigations. Overall, 69.5 per cent in 2019 and 76.8 per cent in 2020 were discharged on the first visit or following investigations or a second visit ( $p < 0.01$ ). The remaining patients needed further investigations and observations.

### Anxiety

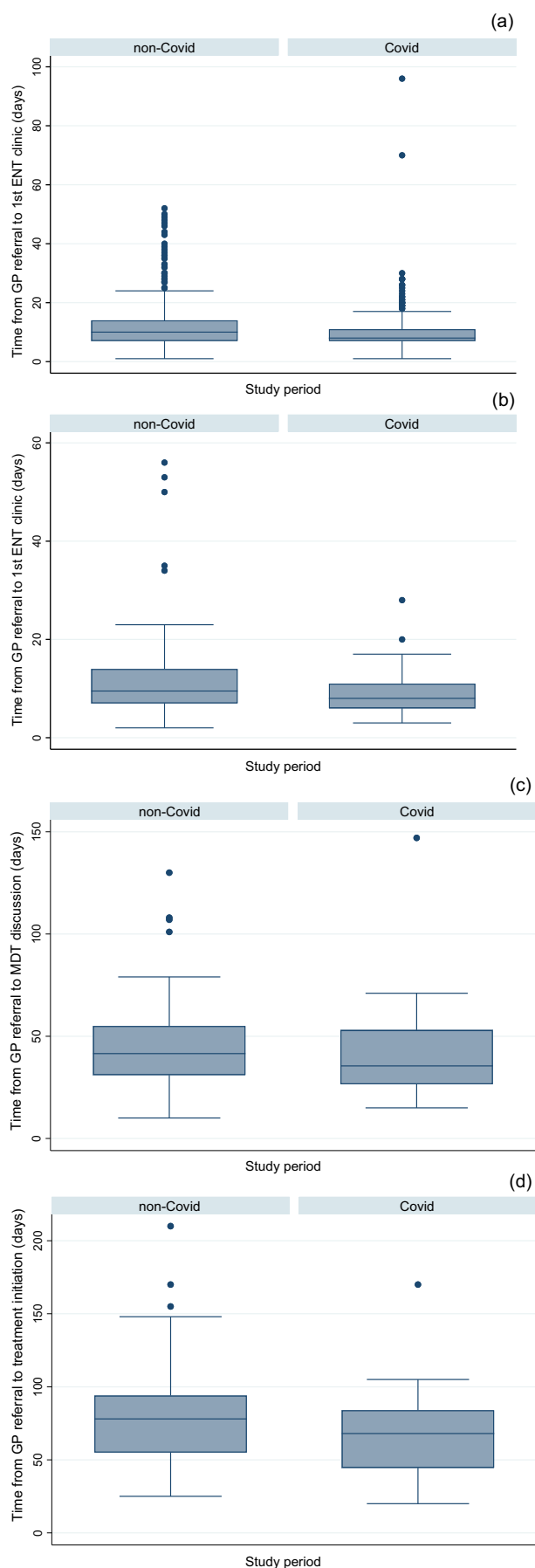
A significant number of patients were referred as urgent suspected cancer cases, but the diagnosis following history taking

and examination were compatible with globus symptoms and laryngopharyngeal reflux. Of these patients, 14.6 per cent ( $n = 126$ ) were seen in 2019; this increased to more than one case in five (22.4 per cent;  $n = 125$ ) during the study period in 2020 ( $p < 0.001$ ). Although not a definite measure, this could suggest increased anxiety among susceptible patients in the population made worse by worries brought on by the pandemic.

### Discussion

During the initial phase of the pandemic, routine and urgent referrals were deferred, and only urgent suspected cancer cases were seen in the clinics, to support the overall Covid-19 response. Some ENT doctors were redeployed to the intensive therapy unit and Covid-19 wards, but there





**Fig. 2.** Box plots comparing 2019 (non-coronavirus period (non-Covid)) vs 2020 (coronavirus period (Covid)) waiting times for: (a) general practitioner (GP) referral to first ENT clinic appointment among all urgent suspected cancer referrals, (b) general practitioner referral to first ENT clinic appointment among all confirmed malignancy cases, (c) general practitioner referral to multidisciplinary team (MDT) discussion, and (d) general practitioner referral to treatment initiation. (Dots indicate outliers.)

were sufficient staff to handle the head and neck urgent suspected cancer pathways.

The rate of urgent suspected cancer referrals dropped, to 74 per cent, following the first national lockdown in March 2020, compared to the same month in 2019. In a similar study investigating the impact of Covid-19 on the head and neck pathway in a busy tertiary centre in the UK, Taylor *et al.* reported that the urgent suspected cancer referrals fell, by 55 per cent, in April 2020, compared to January of the same year.<sup>12</sup> The number of urgent suspected cancer referrals subsequently increased as the coronavirus-related measures were eased by the government in summer months, reaching, in October 2020, a similar number of referral letters to that received in the same month a year prior, potentially to compensate for lost time during the first coronavirus wave.

Factors that might have influenced the drop in number of urgent suspected cancer referrals, despite being given priority during the pandemic, include: changes in patients' behaviours, with patients preferring to stay away from hospitals for fear of contracting the Covid-19 virus; limited clinic slots, associated with compliance to infection controls and social distancing rules; and staff absences because of sickness. In other cancer sites, such as breast oncology, the decrease in number of urgent suspected cancer referrals was due to temporary cessation of the national screening programme from mid-March 2020 to mid-June 2020 (in the Netherlands,<sup>3</sup> for example); however, this was not the case for head and neck malignancies, which have no national screening scheme.

According to the National Disease Registration Service, the conversion rate in all cancer types ranged from 10.8 per cent in 2010 to 7.1 per cent in 2019.<sup>13</sup> Interestingly, according to the same intensive therapy unit data, the national conversion rate for head and neck cancers is much lower, at around 3 per cent. Our study showed a fairly high and consistently stable conversion rate of 10.6 per cent during the pandemic months in 2020, and a rate of 9.7 per cent a year prior ( $p = 0.60$ ). Our previous annual audits yielded conversion rates for head and neck urgent suspected cancer referrals of 8 per cent in 2018 (V Prabhu, unpublished annual audit data). This is more consistent with other published conversion rates in England. Among 400 new urgent suspected cancer referrals in central London, Rimmer *et al.* reported a conversion rate of 9.0 per cent.<sup>14</sup> In a meta-analysis of 15 papers and 17 studies from 2002 to 2013 investigating the two-week rule on head and neck cancer referrals in the UK, Langton *et al.* reported a conversion rate of 8.3 per cent among those seen in oral and maxillofacial surgery clinics, and a rate of 8.8 per cent in ENT clinics.<sup>15</sup> The more recent study by Taylor *et al.* reported a conversion rate of 2.9 per cent in January 2020, which rose to 8.1 per cent in April 2020.<sup>12</sup> They surmised that the increased rate was due to a decrease in the referral of 'worried well' patients.

There was an improvement in the two-week wait rate (from the time of general practitioner referral to the first ENT consultation) in 2020 compared to 2019 (10.0 vs 8.0 days;  $p < 0.001$ ). A huge majority of all urgent suspected cancer referrals were seen within a two-week period in 2020, with a significantly better rate than the year before (92.1 per cent vs 79.6 per cent;  $p < 0.001$ ). This potentially was due to the cancellation of routine and urgent referral appointments, giving the urgent suspected cancer cases priority for the clinic slots.

In our experience, the two-week wait National Institute for Health and Care Excellence guideline for urgent suspected cancers seemed to be an effective net to catch the huge

majority of cancer cases. However, this seems not to be the case in other centres in the UK. A recent report by Tikka *et al.*, published in 2020, highlighted that only 35–38 per cent of head and neck cancers in the UK are currently diagnosed through the 14-day pathway, with the rest being diagnosed following out-patient appointments or emergency admissions.<sup>16</sup> This led the authors to introduce a modified version of the head and neck cancer risk calculator, which assessed age, gender, unintentional weight loss, smoking, alcohol, positive and negative symptoms, and signs of head and neck cancer. They showed that this novel tool can identify high-risk patients at an early stage. ENT UK, the professional body of ENT surgeons in the UK, has encouraged the use of remote triaging for urgent suspected cancer referrals based on the head and neck cancer risk calculator,<sup>17</sup> which we utilised in the initial phase of the pandemic, and this could have helped improve our metrics.

The discharge rate on the first and second visits to the ENT clinic for head and neck urgent suspected cancer referrals remained stable during the study periods, with some improvement during the pandemic times (76.8 per cent vs 69.5 per cent;  $p < 0.01$ ). Overall, almost three-quarters of urgent suspected cancer patients were reassured and discharged after a second visit to the hospital. A similar study, by Rimmer *et al.*, reported that 38.3 per cent of urgent suspected cancer patients were discharged on the first clinic visit.<sup>14</sup>

The waiting time from general practitioner referral to MDT discussion slightly improved during the pandemic, but this difference was not statistically significant on testing (35.5 days vs 41.5 days;  $p = 0.40$ ). The waiting time from general practitioner referral to treatment initiation likewise seemed slightly improved, but again this difference was not statistically significant (68.0 days vs 78.0 days;  $p = 0.16$ ). Both of these metrics, however, did not reach the goals of 31 days for the waiting time from general practitioner referral to MDT discussion, or that of 62 days for the waiting time from general practitioner referral to treatment initiation, regardless of whether during the pandemic or not.

The causes of delays in head and neck MDT discussion and treatment initiation among a few outliers in the sample included repeated biopsies (as the clinical suspicion did not match with the final histopathological reports), patients' non-attendance at diagnostic appointments, and a few patients' initial refusals to undergo treatment. There are also cases when parotid lumps with an initial 'benign' diagnosis are thus not prioritised for surgery, but are ultimately revealed as malignant on final histology, thus skewing the data. Furthermore, the rural setting of the four district general hospitals of the Trust contributes to delays in accessing specialist diagnostics, such as computed tomography with positron emission tomography (CT-PET). There is a 98-mile distance from one district general hospital in southwest Wales to the main tertiary centre in Cardiff where CT-PET scans are performed. Although not measured in this study, Everitt *et al.* showed that delays in PET scanning worsen survival outcomes.<sup>18</sup>

Lastly, the incidence of globus pharyngeus and laryngopharyngeal reflux among all referred urgent suspected cancer cases increased from 14.6 per cent in 2019 to 22.4 per cent in 2020 ( $p < 0.001$ ). A similar observation was reported by Taylor *et al.*, who reported a sharp increase in laryngopharyngeal reflux diagnoses, rising from 27 per cent in January 2020 (before the onset of coronavirus) to 42 per cent in April 2020 (when the first wave of coronavirus hit the country).<sup>12</sup> This was believed to be related to anxiety and stress within

susceptible cohorts, associated with the pandemic. Globus pharyngeus and laryngopharyngeal reflux diagnoses occupy a significant proportion of urgent suspected cancer slots; further research is needed to determine how this can be reduced.

The Nuffield Trust Report published in December 2020 highlighted the pre-existing differences in urban and rural healthcare, made worse by the pandemic.<sup>6</sup> Rural healthcare settings have unique features in terms of: their workforce (i.e. recruitment and staff retention difficulties, higher cost of agency staff), distance (i.e. unproductive staff time when travelling), size (i.e. difficult to reach a safe staffing level) and access to resources (which can be limited). Cancer services were likewise disrupted in remote areas. As of April 2020, the report mentioned that 10 000 fewer cancer patients were seen in rural areas of England. Overall, this audit showed that the rate of the head and neck urgent suspected cancer referrals decreased to at least 35 per cent during the study periods. Fortunately, however, the pathways – specifically the waiting times for clinic consultation, MDT discussion and treatment initiation – have been maintained and have even slightly improved.

- Coronavirus disease 2019 (Covid-19) has worsened urban and rural healthcare system inequalities, especially cancer care
- During April–November 2020, head and neck urgent suspected cancer referrals to ENT decreased by 35 per cent compared to 2019 in rural southwest Wales
- The conversion rate (referrals with confirmed cancer) during the pandemic remained relatively high, at 10.6 per cent
- The national conversion rate for head and neck cancer during a non-Covid-19 period was 3 to 9 per cent
- A significant number of head and neck urgent suspected cancer referrals have globus pharyngeus and acid reflux symptoms; this has increased to over 20 per cent during the pandemic
- In rural Wales, ENT patients' waiting times for definitive diagnosis and treatment initiation remained similar to non-coronavirus times

The metrics on waiting times for general practitioner referral to MDT discussion and to treatment initiation revealed that targets were not reached, either before coronavirus or during the pandemic, and this is primarily because of pre-existing challenges in rural healthcare. The weekly head and neck MDT meeting, for example, is not conducted within the one health board, but involves teaming up with a neighbouring institution. The chemoradiotherapy unit likewise involves a neighbouring health board, with a 70-mile distance in between. Long-standing workforce problems, and financial and capacity issues, are some of the factors that need to be considered in rural areas.

## Conclusion

Admittedly, Public Health Wales reported that southwest Wales – specifically Carmarthenshire, Pembrokeshire and Ceredigion – was the least affected by Covid-19 compared to other Welsh regions.<sup>19</sup> Whilst the Covid-19 pandemic reduced most of the secondary care services and capacities in general, our ENT experience in rural southwest Wales showed that the metrics of waiting times for patients needing to see a cancer specialist, for a definitive diagnosis and for treatment initiation, were relatively unchanged, if not slightly better, compared to non-coronavirus times. However, the overall national targets for waiting times, from general practitioner referral to MDT discussion and from general practitioner referral to treatment initiation, were not attained either during non-coronavirus or coronavirus

times, reflecting the inherent challenges in managing head and neck cancers in remote areas.

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**Competing interests.** None declared

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