

## Two-week referrals for suspected head and neck cancer: two cycles of audit, 10 years apart, in a district general hospital

C WILLIAMS, R BYRNE, D HOLDEN, I SHERMAN, V R SRINIVASAN

*ENT/Thyroid Surgery Department, Arrowe Park Hospital, Upton, Wirral, UK*

### Abstract

**Objective:** To analyse trends in two-week rule referrals for head and neck cancer over 10 years.

**Method:** Data from two-week referrals received by the Wirral University Hospital NHS Trust between 1 January and 30 June 2012 were compared with similar data from 2002.

**Results:** A total of 357 referrals were received during the 6-month audit period, compared with 149 during the whole of 2002. Cancer pick-up rates were 9 per cent and 5 per cent in the first and second cycles, respectively.

**Conclusion:** The annual number of two-week referrals made to our department increased by over 450 per cent in 10 years, but the resulting cancer pick-up rate fell by nearly 50 per cent. Whilst cancer patients need to be seen quickly, the current system is inefficient in parts. Modifications to the treatment pathway should be considered to improve patient care quality and reduce pressure on ENT departments.

**Key words:** Head and Neck Neoplasms; Referral and Consultation; Guideline Adherence

### Introduction

Head and neck cancers are malignant tumours of the upper aerodigestive tract. This group of tumours is heterogeneous, arising from distinct anatomical subsites, including the oral cavity, the naso-, oro- and hypopharynx, the larynx, and the cervical oesophagus. Approximately 6700 new cases are diagnosed each year in England and Wales, and 1100 in Scotland.<sup>1–3</sup>

Squamous cell carcinoma (SCC) accounts for 90 per cent of all head and neck malignancies, and is the 6th most common cancer worldwide.<sup>4,5</sup> Peak incidence occurs in the 5th and 6th decades of life, and there is a male predominance (male:female ratio, 3:1).<sup>6</sup> Smoking and alcohol intake have historically been considered the most significant aetiological risk factors in the development of SCC of the head and neck.<sup>7</sup> More recent evidence, however, also suggests a correlation between human papilloma virus (in particular, genotype 16) infection and SCC of the oral cavity and oropharynx, particularly in younger age groups.<sup>7,8</sup>

Research into international cancer survival between 1978 and 1990 showed a poor five-year survival rate in the UK compared with other developed countries.<sup>9–11</sup> As a result, the Department of Health (DoH) published the 1997 white paper, entitled *The New NHS, Modern, Dependable*.<sup>12</sup> The aim of this legislation was to speed up the referral process for

suspected cancers, thus allowing earlier diagnosis and management, and subsequently improving survival rates. This paper, in conjunction with *The NHS Cancer Plan of 2000*, implemented a fast-track two-week rule target, stipulating that all suspected cancers should be seen by a specialist within 14 days of referral.<sup>13</sup>

The national fast-track referral guidelines for suspected cancer of the head and neck are based on 10 red flag symptoms and clinical findings (Table I). These are used to improve general practitioner awareness of underlying malignant processes, thus leading to earlier detection.

Wirral University Hospital NHS Trust has adapted these guidelines to produce its own two-week rule referral proforma, which uses eight indications for urgent referral (Table II). The actual referral form used by general practitioners in our catchment area includes the criteria of suspected cancers of the head and neck and the thyroid. General practitioners are expected to tick the appropriate box to indicate suspected cancer (Appendix I)

The purpose of the fast-track process is to increase efficiency of the diagnostic process and treatment pathway, thus improving patient care. However, such enhanced awareness has increased the pressure on the health service. More referrals are now being received by already busy out-patient departments. Priority is

TABLE I DEPARTMENT OF HEALTH REFERRAL GUIDELINES FOR SUSPECTED HEAD AND NECK CANCER	
Category	Symptom
1	Hoarseness persisting for >6 weeks
2	Oral mucosa ulceration persisting for >3 weeks
3	Oral swelling persisting for >3 weeks
4	Red or white patches of the oral mucosa
5	Dysphagia persisting for 3 weeks
6	Unilateral nasal obstruction particularly when associated with purulent discharge
7	Unexplained tooth mobility not associated with periodontal disease
8	Unresolving neck masses for >3 weeks
9	Cranial neuropathies
10	Orbital masses

TABLE II REFERRAL CRITERIA FOR SUSPECTED HEAD AND NECK CANCER	
Category	Symptom
1	Hoarseness persisting for >6 weeks
2	Unexplained lump in the neck of recent onset, or previous undiagnosed lump that has changed over 3–6 weeks
3	Unexplained persistent swelling of the parotid or submandibular gland
4	Unexplained persistent sore throat
5	Unexplained ulceration of the oral mucosa, or oral mass persisting for >3 weeks
6	Orbital masses
7	Unexplained red or white patches of the oral mucosa that are painful, swollen or bleeding
8	Unilateral unexplained pain in the head & neck area for >4 weeks associated with otalgia, but with normal otoscopy

given to two-week referrals over other forms of referrals so as to meet targets. This also increases the pressures upon both the 31- and 62-day targets for cancer treatment set by the DoH, regarding time from diagnosis to start of treatment for all patients and time from general practitioner referral to start of treatment for two-week referral patients, respectively.

We undertook two audit cycles of two-week referrals in our hospital, 10 years apart. The aims of this study were to analyse the trends during both cycles, assess the efficiency of the referral pathway and suggest changes to improve the referral process.

## Materials and methods

Arrowe Park Hospital is a busy district general hospital that caters to a population of around 350 000. The first audit cycle refers to the 12-month period between January 2002 and December 2002, and the second refers to the 6-month period between January 2012 and June 2012. For the first audit cycle, a list of all two-week rule referrals received by the Arrowe Park Hospital ENT department between 1 January and 31 December 2002 was compiled from the departmental referral database. Once the study group was obtained,

fast-track referrals and patient case notes were collected and retrospectively reviewed. Data were compiled by a single researcher, using a standardised data collection form. Thereafter, the following categories were assessed: patient demographics; patient risk factors; meeting the two-week target for appointment; presenting signs and symptoms documented on the referral form; appropriateness of referral; and cancer pick-up rate.

The second audit cycle was undertaken 10 years later. For this, a second list of head and neck two-week rule referrals received by the Arrowe Park Hospital ENT department was compiled. A total of 676 referrals were obtained between 1 January and 31 December 2012. Owing to time constraints, only those patients referred from 1 January 2012 to 30 June 2012 were included in the second cycle. As before, a retrospective review of case notes and referral letters was carried out. The same data collection standardisation was undertaken and the same categories were assessed.

## Results

Of the 149 patients referred during the first cycle (1 January 2002 to 31 December 2002), 123 sets of patient case notes were successfully obtained and reviewed (83 per cent). During the second cycle (1 January 2012 to 30 June 2012), 357 patients were referred. Of these, 339 sets of notes were obtained and reviewed (95 per cent).

Patient demographics are shown in Table III. More female patients were referred in both audit cycles. The age range of patients was also similar, as was the average patient age at referral.

Head and neck cancer risk factors are shown in Table IV. The percentage of referred patients with a history of smoking was similar between the two audit cycles. The percentage of patients with excess alcohol intake fell from 26 per cent in the first cycle

TABLE III PATIENT DEMOGRAPHICS		
Parameter	1st cycle, 2002	2nd cycle, 2012
Number of patients reviewed	123	339
Male:female ratio	56:67	169:170
Age range (y)	20–89	20–91
Mean age (y)	59	61

y = years

TABLE IV RISK FACTORS		
Parameter	1st cycle, 2002 (n (%))	2nd cycle, 2012 (n (%))
Smokers or ex-smokers	36 (29)	99 (29)
Alcohol excess	32 (26)	35 (10)
No risk factors documented	87 (71)	132 (39)

TABLE V  
FAILURE TO MEET THE TWO-WEEK TARGET

Reason	1st cycle, 2002 (n)	2nd cycle, 2012 (n)
Failure to attend	1	5
Patient cancellations	1	2

to 10 per cent in the second. Alcohol excess was defined as more than the recommended weekly intake. A large number of patients in both study samples had no documented risk factors. However, the overall proportion with documented risk factors was lower in 2012 than in 2002.

The efficiency of the ENT department in meeting the two-week rule target was assessed in both cycles. This was done by calculating the time from general practitioner referral to the out-patient appointment. In both cycles, 98 per cent of patients were seen within two weeks (Table V).

Both audit cycles assessed documentation provided by the general practitioner on presentation, symptoms and signs. This information was derived from the ticked boxes and additional information on the referral form. For some referrals, more than one box had been ticked. If no boxes were ticked, then the symptoms and findings specified in the additional information were used for analysis. However, referral forms were completely blank for 14 patients in the first cycle and 23 patients in the second (Table VI).

Referrals were classified as appropriate or inappropriate. Referrals were deemed inappropriate in the following circumstances: cancellation of appointment by patient; failure to attend clinic; blank referral form; and some thyroid referrals. Thyroid lumps referred to as neck lumps rather than indicated on the thyroid section of the proforma were classified as inappropriate. This was done because we consider that general

TABLE VI  
PRESENTING SIGNS AND SYMPTOMS

Symptom	1st cycle, 2002 (n)	2nd cycle, 2012 (n)
Hoarseness	28	140
Neck lump	39	82
Unexplained persistent sore throat	0	89
Dysphagia	17	0
Persistent swelling salivary gland	0	19
Unilateral nasal obstruction	2	0
Oral swelling	10	0
Ulceration of oral mucosa for >3 weeks	3	17
Unhealing ulcer or skin lesion	4	0
Orbital masses	0	1
Red or white patches	4	4
Ulcerated or pigmented skin lesion	2	0
Unilateral pain in the head & neck area	0	24
Thyroid	0	23
Blank proforma	14	23
Total	123	422*

\*More than one box ticked

TABLE VII  
INAPPROPRIATE REFERRAL

Reason	1st Cycle, 2002	2nd Cycle, 2012
Patient cancelled	1	2
Patient did not attend	1	5
Blank forms	14	23
Thyroid lump misclassified	0	12
Total inappropriate	16 (13%)	42 (13%)

practitioners should be able to correctly identify thyroid lumps and decide whether they represent a higher cancer risk, thus necessitating fast-track referral as a thyroid lump, or a lower cancer risk, which does not require a two-week referral (Table VII).<sup>14</sup>

Despite more referrals being made in the second cycle, the overall cancer pick-up rate from fast-track referrals in our hospital fell from 9 per cent (11/123) to 5 per cent (17/339) in the 10-year intervening period.

## Discussion

Our study compared 12- and 6-month patient samples, 10 years apart. Owing to the large number of referrals made during 2012, it was decided that a six-month sample in the second cycle would provide sufficient data to produce a meaningful comparison. In the 10-year period, the number of fast-track referrals made to our ENT department more than quadrupled, although the cancer pick-up rate fell by half. There are many reports regarding two-week rule pathways currently in place in various specialties.<sup>15-17</sup> Although the change in the reported referral rate is variable, the general increasing trend echoes our own.

Pacifico *et al.* reviewed malignant melanoma fast-track referrals made to their rapid access clinic over a four-year period.<sup>15</sup> They reported an average annual increase of threefold in patients seen between 2003 and 2006, equating to an 28 extra patients per week requiring review within 2 weeks. Potter *et al.* performed a prospective review of patients referred to a breast clinic from primary care from 1999 to 2005.<sup>16</sup> Fast-track referrals increased by 42 per cent during this period; however, the cancer pick-up rate from these referrals dropped from 12.8 per cent in 1999 to 7.7 per cent in 2005. Notably, 27 per cent of all cancers diagnosed in this study were not two-week rule referrals. Similar findings were made in a study of colorectal cancer by Thorne *et al.*<sup>17</sup> They performed a critical appraisal of 12 studies to assess the impact of the fast-track referral process on colorectal cancer services.<sup>17</sup> They found that only 10.3 per cent of two-week rule referrals resulted in a diagnosis of cancer, accounting for 24 per cent of all cancer diagnoses.<sup>17</sup> Of the remaining cancer cases, 52.4 per cent came from standard referrals and 24.1 per cent from emergency referrals.<sup>17</sup>

Our results are similar to those of other studies into head and neck cancer. Hobson *et al.* reviewed all

patients presenting to their ENT department with suspected cancer in 2005.<sup>18</sup> They found the commonest cause for referral to be hoarseness or a neck lump. Of the two-week rule patients, 12 per cent were subsequently diagnosed with cancer. Of all patients diagnosed with cancer, 44 per cent were not sent via the urgent referral pathway. Lyons *et al.* audited head and neck fast-track referrals during a 12-month period.<sup>19</sup> They found that 71 per cent of patients diagnosed with cancer were not referred under the two-week rule pathway, and that only 15 per cent of all fast-track referrals were subsequently diagnosed with a malignancy. Of the patients sent as ordinary referrals, time taken to be seen was much longer than two weeks.

After reviewing both our findings and the published literature, we have some concerns about fast-track referrals. Our own figures show that the referral rate is increasing. Although cancer incidence rates are rising, the increase in referral rate is grossly disproportionate. One reason could be the improved general practitioner awareness of red flag symptoms as a result of the two-week rule guidelines. However, cancer pick-up rate amongst two-week referrals is declining. This is a significant concern because a large proportion of diagnosed malignancies still come from standard referrals from both general practitioners and other hospital departments. For example, during the 6-month second audit cycle, 27 patients were diagnosed with head and neck cancer in our ENT department. Of these, 10 patients (37 per cent) came from non-fast-track referrals. With priority being given to fast-track referrals and their increase in volume, patients with standard referrals are now taking longer to be seen, and cancer diagnoses are therefore delayed in this patient group. Further, the rise in referrals is increasing pressure on already stretched out-patient departments, and subsequently increasing patient morbidity and mortality.

- **Head and neck cancers are malignant tumours of the upper aerodigestive tract**
- **Approximately 6700 new cases are diagnosed each year in England and Wales, and 1100 in Scotland**
- **The NHS Cancer Plan 2000 stipulated that all suspected cancers should be seen by a specialist within 14 days of referral**
- **The rise in fast-track referrals made increases pressures on ENT Departments, with only a small proportion yielding a cancer diagnosis**

Interestingly, the proportion of inappropriate referrals was similar in both audit cycles. Reasons for this classification include blank proformas, thyroid lumps being referred to as neck lumps and patients cancelling or not attending their appointments. Reasons for patients failing to attend the out-patient appointment

following a two-week referral could be their lack of awareness of the seriousness of their condition, their perception of low priority and incorrect prioritisation of their problems by the general practitioner. We believe that general practitioners often have a low threshold for using the two-week referral pathway. We also feel that general practitioners should explain the nature of the fast-track referral route, and decide with the patient whether the symptoms are serious enough to prioritise attending a hospital appointment over any other personal commitments. It is worrying that blank referral forms are still being received. This leads us to speculate about whether those patients actually met the fast-track guidelines, or whether the referral process was initiated for its ease of use and the guarantee that the patient would be seen within a short space of time.

We are particularly concerned that unexplained persistent sore throat qualifies as a referral criteria. Our study showed that although 89 patients with this symptom (26 per cent) were referred, only 1 case turned out to be malignant. In our opinion, this symptom is too vague, especially when not lateralised, and results in an extremely low cancer pick-up rate. We therefore recommend that the referral pathway should be restricted to including unilateral sore throat.

## Conclusion

Our study showed that the number of two-week rule referrals made to a district general hospital ENT department increased over 10 years, but that cancer pick-up rates as a result of these referrals fell. Inappropriate referrals are increasing. Therefore, quality assessment and improvement of the referral pathway and education of general practitioners are required. Modifications should be made to improve the quality of patient care and decrease the pressure of these referrals on ENT departments.

## References

- 1 NHS Information Centre. National head and neck cancer audit. 6th annual report. Leeds: NHS Information Centre for Health and Social Care, 2011
- 2 Centre for Clinical Practice at NICE. Guidance on cancer services: improving outcomes in head and neck cancer. The manual. London: National Institute for Clinical Excellence, 2004
- 3 Scottish Intercollegiate Guidelines Network. Diagnosis and management of head and neck cancer. Edinburgh: Scottish Intercollegiate Guidelines Network, 2006
- 4 Marur S, Forastiere AA. Head and neck cancer: changing epidemiology, diagnosis and treatment. *Mayo Clin Proc* 2008;**83**: 489–501
- 5 Parkin DM, Pisani P, Ferlay J. Estimates of the worldwide incidence of eighteen major cancers in 1985. *Int J Cancer* 1993;**54**: 594–606
- 6 Sanderson RJ, Montague ML. Surgical management of head and neck malignancy. *Surgeon* 2004;**2**:7–14
- 7 La Vecchia C, Tavani A, Franceschi S, Levi F, Corrao G, Negri E. Epidemiology and prevention of oral cancer. *Oral Oncol* 1997;**33**:302–12
- 8 D'Souza G, Kreimer AR, Viscidi R, Pawlita M, Fakhry C, Koch WM *et al.* Case-control study of human papillomavirus and oropharyngeal cancer. *N Engl J Med* 2007;**356**:1944–56

9 Berrino F, Sant M, Verdecchia A, Capocaccia R. Survival of cancer patients in Europe—the EUROCARE study. *IARC Sci Publ* 1995;**132**:1–475

10 Coebergh JWW, Sant M, Verdecchia A, Capocaccia R, Hakulinen T, Estève J. Survival of adult cancer patients in Europe diagnosed from 1978–1989: The EUROCARE II Study. *Eur J Cancer* 1998;**34**:2137–78

11 Berrino F, Capocaccia R, Estève J, Gatta G, Hakulinen T, Micheli M *et al.* Survival of cancer patients in Europe: the EUROCARE-2 study. *IARC Sci Publ* 1999;**151**:1–572

12 Department of Health. The New NHS: Modern, Dependable. London: HMSO, 1997

13 Department of Health. The NHS Cancer Plan: A Plan for Investment, a Plan for Reform. London: HMSO, 2000

14 Perros P, ed. *Guidelines for the management of thyroid cancer*, 2nd edn. In: Report of the Thyroid Cancer Guidelines Update Group. London: British Thyroid Association, Royal College of Physicians, 2007

15 Pacifico MD, Pearl RA, Grover R. The UK Government two-week rule and its impact on melanoma prognosis: an evidence-based study. *Ann R Coll Surg Engl* 2007;**89**:609–615

16 Potter S, Govindarajulu S, Shere M, Braddon F, Curran G, Greenwood R *et al.* Referral patterns, cancer diagnoses, and waiting times after introduction of two week wait rule for breast cancer: prospective cohort study. *BMJ* 2007;**335**:288

17 Thorne K, Hutchings HA, Elwyn G. The effects of the Two-Week Rule on NHS colorectal cancer diagnostic services: a systematic literature review. *BMC Health Serv Res* 2006;**6**:43

18 Hobson JC, Malla JV, Sinha J, Kay NJ, Ramamurthy L. Outcomes for patients referred urgently with suspected head and neck cancer. *J Laryngol Otol* 2008;**122**:1241–44

19 Lyons M, Philpott J, Hore I, Watters G. Audit of referrals for head and neck cancer – the effect of the 2-week, fast track referral system. *Clin Otolaryngol Allied Sci* 2004;**29**:143–5

Address for correspondence:  
Mr V Srinivasan,  
ENT Department,  
Arrowe Park Hospital,  
Arrowe Park Road,  
Wirral CH49 5PE, UK

E-mail: [cheenu51@hotmail.com](mailto:cheenu51@hotmail.com)

Mr V Srinivasan takes responsibility for the integrity of the content of the paper  
Competing interests: None declared

## APPENDIX I

### TWO-WEEK RULE REFERRAL PROFORMA

Head & Neck		SUSPECTED HEAD & NECK CANCER REFERRAL FORM		To make an URGENT REFERRAL, Fax / E-mail to: XXXXXXXXX Telephone Contact No.:	
REFERRER'S DETAILS		PATIENT DETAILS		CULTURAL, MOBILITY, IMPAIRMENT ISSUES	
Referring GP:		Title & Surname		What is the patient's preferred first language?	
GP Code:		Forename(s)		Ethnic Origin:	
GP Address		Address		Religion:	
Postcode		Postcode		Is the patient from overseas?	YES <input type="checkbox"/> NO <input type="checkbox"/>
Registered GP		D.O.B.		Is the patient a temporary visitor?	YES <input type="checkbox"/> NO <input type="checkbox"/>
GP Tel. No.		Gender: Male <input type="checkbox"/> Female <input type="checkbox"/>		Is disabled access required?	YES <input type="checkbox"/> NO <input type="checkbox"/>
GP Fax. No.		NHS No.		Is transport required?	YES <input type="checkbox"/> NO <input type="checkbox"/>
Date seen by GP:		Hospital No		Hearing or visual impairments?	YES <input type="checkbox"/> NO <input type="checkbox"/>
Decision to refer date:		*Tel. No./Mobile No.		Translation or Interpretation Services required?	YES <input type="checkbox"/> NO <input type="checkbox"/>
* N.B. Please provide a current contact telephone number for the patient so that the Trust can contact the patient within 24-hours to arrange a convenient appointment.					
<b>URGENT REFERRAL (referral guidelines are attached to proforma)</b>					
RISK FACTORS SMOKING <input type="checkbox"/> ALCOHOL <input type="checkbox"/> OTHER <input type="checkbox"/>		Please tick as appropriate ENT <input type="checkbox"/> ORAL & MAXILLOFACIAL <input type="checkbox"/>			
CLINICAL PRESENTATION			<b>THYROID CANCER</b> Refer urgently patients with a thyroid swelling associated with any of the following		
Hoarseness persisting >6 weeks, particularly smokers aged older than 50 years and heavy drinkers	YES <input type="checkbox"/> NO <input type="checkbox"/>	A solitary nodule increasing in size	YES <input type="checkbox"/> NO <input type="checkbox"/>		
Unexplained lump in the neck of recent onset, or a previously undiagnosed lump that has changed over a period of 3-6 weeks	YES <input type="checkbox"/> NO <input type="checkbox"/>	A family history of endocrine cancer	YES <input type="checkbox"/> NO <input type="checkbox"/>		
Unexplained persistent swelling in parotid or submandibular gland	YES <input type="checkbox"/> NO <input type="checkbox"/>	Cervical Lymphadenopathy	YES <input type="checkbox"/> NO <input type="checkbox"/>		
Unexplained persistent sore throat or painful throat	YES <input type="checkbox"/> NO <input type="checkbox"/>	Patients aged 65 years and older	YES <input type="checkbox"/> NO <input type="checkbox"/>		
Unexplained ulceration of the oral mucosa or mass persisting >3 weeks	YES <input type="checkbox"/> NO <input type="checkbox"/>	A history of neck irradiation	YES <input type="checkbox"/> NO <input type="checkbox"/>		
Orbital masses	YES <input type="checkbox"/> NO <input type="checkbox"/>	Unexplained hoarseness or voice changes	YES <input type="checkbox"/> NO <input type="checkbox"/>		
Unexplained red & white patches (including suspected lichens planus of the oral mucosa that are painful or swollen or bleeding	YES <input type="checkbox"/> NO <input type="checkbox"/>	Very young (pre-pubertal) patient	YES <input type="checkbox"/> NO <input type="checkbox"/>		
Unilateral unexplained pain in the head & neck area >4 weeks, associated with otalgia ((earaches) but a normal otoscopy	YES <input type="checkbox"/> NO <input type="checkbox"/>	Unexplained tooth mobility persisting for more than 3 weeks → REFER TO DENTIST			
Any additional clinical information					