Inclusion of clinical photographs with general dental practitioner electronic referrals of patients with oral mucosal disease to secondary care: a service review

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Key points

A good-quality clinical description is still the most important factor in ensuring appropriate triage of a referral, but a photograph can be an invaluable addition.	If a photograph is included, a patient's referral can be appropriately rejected with advice, upgraded, or the patient booked in a timeframe commensurate with the urgency of the situation, with assurance this is an appropriate use of secondary care appointments.	National guidance on the inclusion of photographs with oral medicine referrals is recommended to help specialists prioritise patients, manage patients remotely and minimise reduce patient risk.

Abstract

Introduction This service evaluation reviewed how the inclusion of photographs in dentist referrals to an oral medicine specialist service can improve the service for triage, prioritisation and diagnosis.

Materials and methods Data were prospectively collected from e-referrals over a four-month period. Any change in appointment prioritisation resulting from review of photographs at the vetting stage was recorded.

Results Only 29.5% (82 of 367) of referrals included a photograph. Of these, 5% were 'rejected with advice' since the photograph indicated the patient did not require a secondary care appointment. Additionally, 14% of all referrals were upgraded in urgency, five of which were due to concerns of malignancy, and three of five were upgraded solely based on the photographs as they showed features of possible malignancy, where the written element of the referral did not describe nor raise such concerns.

Discussion and conclusions Including a photograph with a referral can often make up for inaccurate or insufficient written content, allowing appropriate and safe prioritisation, especially where the referrer has failed to recognise possible malignancy. Photographs can also prevent unnecessary referral upgrades, ensure an appointment is necessary and can be invaluable as a baseline comparator.

Introduction

The scope of oral medicine practice primarily includes disorders of oral soft tissues, salivary glands and pain or neurological dysfunction, including pain of a non-dental origin.[1] Patient referrals to oral medicine are from general dental practitioners (GDPs) or general medical practitioners. In the UK, there are only 17 oral medicine units, all based in university dental hospitals. Due to this small number and

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the geographically diverse locations of oral medicine secondary care services, demand often outweighs capacity, resulting in long waiting times for patients.

In 2019, Wales introduced an electronic referral management system (e-RMS), requiring all GDP referrals to secondary care to be sent via this system. This replaced traditional paper referrals, minimising the risk of late or lost postal referrals, and therefore helping to tackle potential delays in patients receiving treatment, as well as promoting appropriate referrals.[2] The e-RMS requires the GDP to complete a standardised template which describes the patient's presenting complaints and categorises the problem. The referring GDP may also state their opinion on the urgency of the referral, selecting either 'routine care' or 'urgent'. Once a referral is received, it is triaged ('vetted') by an oral medicine senior staff member to decide how urgently the patient should be seen based on the information provided (written description ± photograph).

The vetting clinician may decide the referral is routine (a patient with a condition/lesion that is perceived not to pose any significant risk of mortality or morbidity), urgent (a patient with no suspected oral malignancy but a condition/lesion that may be associated with morbidity) or requires an upgrade to the urgent suspected cancer (USC) pathway.

Where referring GDPs suspect a malignancy, a separate, specific USC e-referral form should be used. These referrals are directed to a designated email inbox which is monitored daily, before being passed to clinicians for triage. However, not infrequently, GDPs incorrectly use a standard oral medicine e-RMS form to refer a suspected cancer, explicitly stating they are concerned about a cancer in the written description they provide. Alternatively, GDPs use the standard oral medicine e-RMS form but then describe clinical signs and symptoms that raise a concern of malignancy when read by the vetting clinician,[3] where the GDP has failed to recognise their description correlates

with possible malignancy. Therefore, for these reasons, the vetting clinician may upgrade the referral to the USC pathway, requiring the patient to be seen within two weeks of the date of referral, in accordance with the National Institute for Health and Care Excellence guidelines.[4] A summary of the referral pathway is shown in Fig. 1. The diagnostic yield for malignancy from USC referrals by GDPs can be as low as 1.4%.[5] Conversely, the rate of diagnosis of malignancy from non-USC referrals can be higher than those referred via a USC pathway.[6]

Vetting clinicians rely entirely on the information provided by the GDP to make an informed decision on how to accurately triage patients. However, referrals are often brief and may not provide sufficient information to make an informed decision. This might mean the referral is accepted, and later, when the patient is seen, it is apparent they did not require an appointment in secondary care. Alternatively, words which imply the lesion has a sinister nature may be used in a referral, and for safety netting, these referrals will be upgraded to the USC pathway. Often, subsequently, there is not a resultant malignant diagnosis and a more detailed referral or accompanying photograph from the GDP would have avoided an unnecessary upgrade at the vetting stage.[3] An example of a good and a poor referral is shown in Box 1.

The e-RMS for referrals into secondary care gives GDPs the option to include a radiograph or a photograph to supplement their referral. This addition can greatly enhance a clinical description and may eliminate the need for repeat radiation exposure. Photographs in oral medicine practice have multiple purposes, including aiding diagnosis, acting as a tool for monitoring and assisting with teaching. In an era of growing technology and digital dentistry, more practices have access to, and training on, the use of cameras for dental purposes.

The e-RMS system also has a facility for the vetting clinician to reply to the referring clinician directly. This feature has several uses, including allowing the clinician to suggest a diagnosis and treatment that the GDP can implement in primary care, negating the need for a secondary care appointment altogether, or allowing the GDP to begin initial treatment to try to improve the patient's symptoms whilst they await an appointment in secondary care. This will be to the benefit of both the patient and the referring clinician.

Fig. 1 Summary of the e-referral pathway once received from the GDP
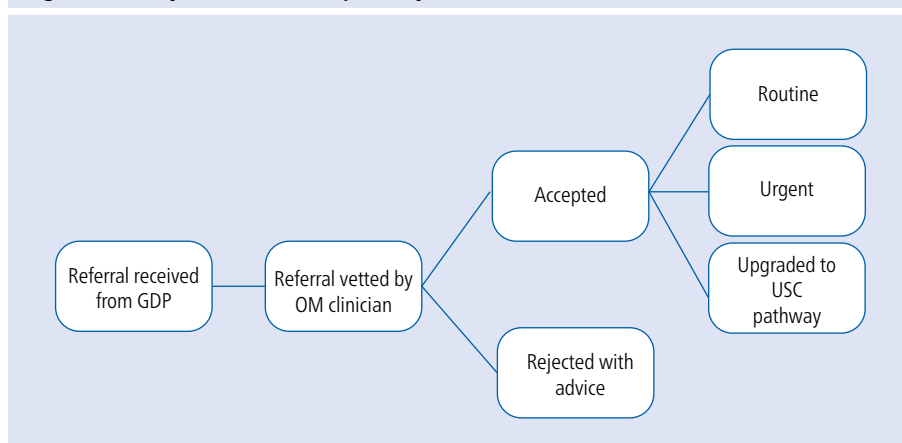
Box 1 Examples of referrals. The patient's principal complaint: please describe any previous treatment or hospital visits for the condition

Good referral example:

- The patient has been experiencing a burning mouth sensation from the posterior border of the hard palate for 3–4 years. The patient was diagnosed as B12 deficient and has been receiving supplemental injections since December 2021; however, still finds the symptoms flare up
- The patient is a student and says that stressful times such as exam periods exacerbate this issue. I have clinically examined the mucosa and could not note any soft tissue abnormalities. I have advised the patient of my provisional diagnosis of burning mouth syndrome and have prescribed difflam spray
- Please can I request a review of this patient and management as required?

Poor referral example:

- On exam noted erythematous lesion right lateral tongue and dorsum.

Suggesting a diagnosis and giving advice on initial treatment at the triage stage is much more likely if a photograph accompanies the referral eg for benign, asymptomatic lesions with a good clinical photograph and description, the dentist can be immediately informed of the likely diagnosis, and that an appointment in secondary care is not required.

At present, there is no national standard for the inclusion of photographs in oral medicine referrals. Photographs are mandatory for referrals of soft tissue lesions to at least one UK oral medicine unit, whilst several other units strongly recommend or subsequently request a photo before accepting the referral. It is recognised that not all oral medicine diagnoses fall into a category for photographs to be relevant (eg facial pain); however, for oral mucosal disease, photographs can be an invaluable aid to diagnosis, allowing accurate and appropriate triaging of referrals, as well as providing an excellent baseline comparator at a patient's first appointment, which may be some months after referral. This is especially helpful if the lesions have resolved or are temporarily absent at the time of the secondary care consultation eg as is often the case with aphthous ulceration.

Aims and objectives

This service review aimed to determine if clinical photography in GDP e-referrals can aid to patient referrals to the oral medicine department by:

- Allowing the vetting clinician to accurately determine the priority of an appointment (routine, urgent or USC, including upgrades/downgrades from the GDP opinion on urgency)
- Avoiding an appointment completely where not required (reject with advice).

Materials and methods

The service evaluation was approved by the relevant local audit and clinical governance groups. A standardised, data collection template was created (Table 1). All referrals were anonymised in the data collection. Data were collected by the vetting clinician, at the time of vetting, over a four-month period. Assessment of photograph quality is subjective; therefore, calibration was completed between vetting clinicians. E-referrals made via the USC pathway were not included in this

Table 1 Example of data collection sheet

Ref no	Referral type (routine/urgent/other)	Outcome (routine/urgent/upgrade to USC)	Photo included? (Y/N)?	Photo needed (Y/N)	Photo quality (poor/adequate/good)	Photo useful? (Y/N)	Likely diagnosis
1	Routine	Routine	N	Y	-	-	Polyp hard palate
2	Not stated	Urgent 3–6 weeks	Y	Y	Good	Y	Amalgam tattoo
3	Urgent	Routine	Y	Y	Adequate	Y	Geographic tongue
4	Not stated	Urgent <12 weeks	Y	Y	-	-	Lichen planus
5	Routine	Routine	N	Y	-	-	Fibro epithelial polyp

Fig. 2 Summary of inclusion and exclusion criteria
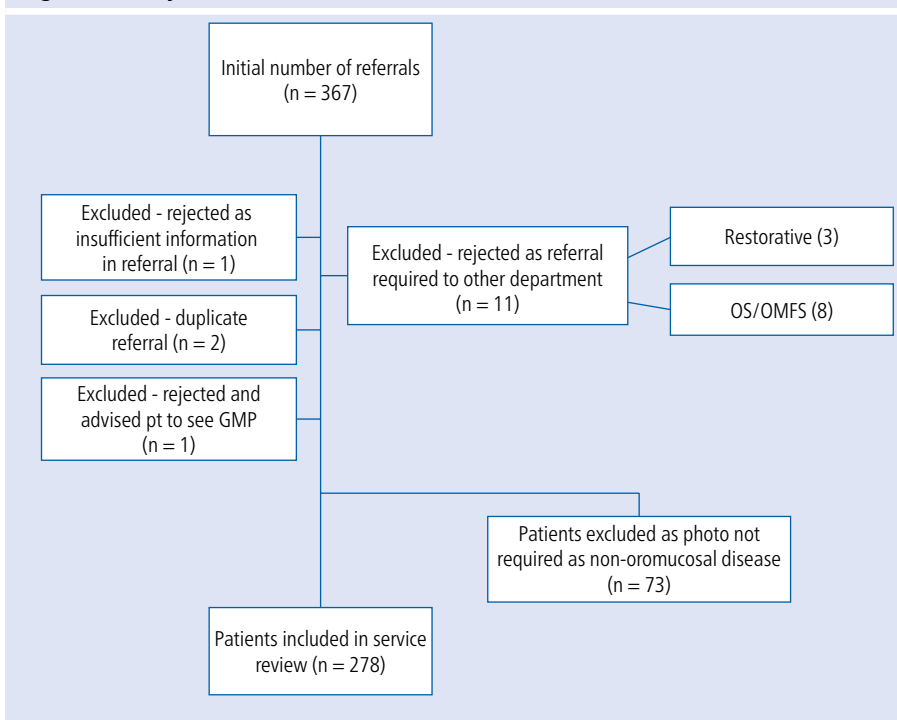
service review as they are sent via a separate, designated referral pathway.

Results

In total, data from 367 referrals were prospectively collected. Following data collection, any rejected referrals were excluded from the review (n = 16). Reasons for rejection included: i) incorrect secondary care department for referral; ii) insufficient information provided; iii) referral to a general medical practitioner required (not appropriate for any dental speciality); or iv) duplicate referrals. Following this, any conditions where a photograph would not be of clinical use were excluded (n = 73). This included conditions such as burning mouth syndrome, facial pain, dry mouth, temporomandibular joint disorders and salivary gland disorders (Fig. 2).

Number of photographs

Less than one-third of referrals included photographs (29.5%; n = 82). In total, 80 of these were taken by the GDP and two were the patients' own photographs, which they provided to their GDP.

Photo quality

A total of 85.4% (n = 70) of photographs were of sufficient quality to aid the triage process and have clinical value at the patient's subsequent appointment (Fig. 3). This highlights that referring clinicians have the clinical skills to take photographs when required.

Referral outcomes

At the triage level, four of the 82 referrals with photographs were 'rejected with advice', representing 5% of referrals. These referrals had a good clinical description and a photograph

illustrating the described lesion; therefore, the referral could be confidently 'rejected with advice'. The dentist was informed of the diagnosis immediately through the e-RMS system and reassured the patient did not require an appointment in secondary care at present, but instructed to re-refer if there were any changes or ongoing concerns that had not been addressed by the vetting clinician's advice. These referrals showed normal anatomy or asymptomatic benign lesions, including Fordyce spots (n = 1), fibroepithelial polyp (n = 2) and maxillary/mandibular exostoses (n = 1).

Referrals upgraded

Of the 287 referrals, 14% (n = 39) were upgraded by the vetting clinician. As described previously, the referring GDP can specify their opinion on the urgency of the referral. Upgrades by the vetting clinician constituted either routine to urgent, routine to USC, or urgent to USC. Of the referrals that were upgraded, the majority (59% [n = 23/39]) did not include a photograph (Fig. 4), meaning the vetting clinician could only use the description provided by the dentist, thus referrals were more likely to be upgraded if a photograph was not included.

A total of five referrals were upgraded to the USC pathway due to concerns of malignancy. Of these, four had attached photographs, with three referrals being upgraded solely based on these included photos. If the GDP had not taken and included these photographs, these referrals would not have been upgraded in urgency based only on the written descriptions provided.

Discussion

In the UK, there have been multiple surveys evaluating the use of clinical photography. In 2004, only 35% of dentists used clinical

photography; however, this had risen to 48% in 2010 and is likely to have continued to rise.[7,8] It has been suggested that many dentists do not routinely take photographs for inclusion with referrals as this is too time-consuming;[9] however, much like all new skills in dentistry, efficiency and speed tend to have a positive correlation with practice. Most dental practices now own and use cameras to take photos of patient cases to promote their business via practice websites and social media; therefore, GDPs are likely to be much more adept at taking clinical photographs than ever before, such that taking a photograph to include with a referral should not be a time-consuming task.

Postgraduate dental photography courses are available in most deaneries; however, the authors feel that for the purpose of illustrating a soft tissue lesion for a referral to secondary care, these are not necessary, as most GDPs are able to take basic photos to a good standard (Fig. 3).

Informed consent (ideally written consent) is required to take and use a photograph of a patient, and the resultant image is a form of personal health data which must be protected and stored securely in line with the General Data Protection Regulations 2016, the Data Protection Act 2018, and the General Dental Council's Standards for the dental team.[10,11,12] Dental professionals should use a digital single-lens reflex (DSLR) camera and RAW format (giving an uncompressed and unprocessed image) for clinical photography. The significance of a RAW image is that it cannot be manipulated, allowing the image to have legal relevance.[13] The latest smartphones have the ability to take RAW photos; however, appropriate storage of these remains an issue. Various smartphone platforms, such as Clinical Cam or RxPhoto,[14] have been created to allow photos to be sent easily and securely between healthcare professionals. A 2018 study which introduced one of these platforms showed 93% of plastic surgeons took clinical photos with their smartphones because of ease and portability.[15] This highlights the benefits and usage of smartphones in clinical photography which will likely continue to grow; although, until there is a ubiquitous secure platform for storage and transfer of images taken on a smartphone, the use of clinicians' smartphones for photography is not advised.

A patient's own photographs taken on a smartphone ('selfies' or photos taken by friends/family) can be a useful part of the

Fig. 3 Photo quality

Fig. 4 Referrals upgraded
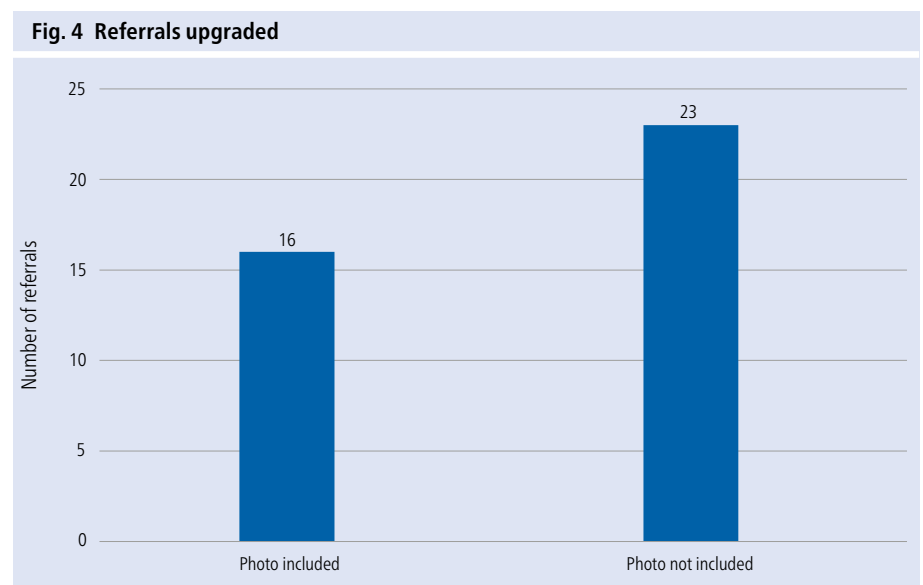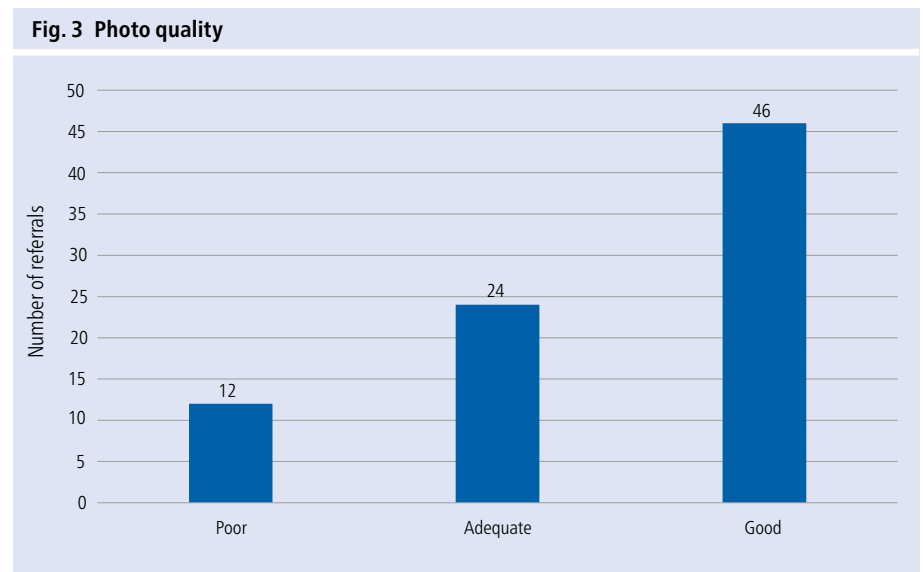
history and contribute to the diagnosis when viewed at the time of an appointment in secondary care, but they may also be supplied from the patient to the GDP for inclusion in their referral. This may be useful if the GDP is unable to take clinical photographs, or if the lesions have temporarily resolved at the time of GDP assessment and referral (ie the patient asks for a referral for something that is not currently present, such as recurrent ulcers). Once these images pass from the patient to the GDP, they form part of the patient's healthcare record and are subject to the same rules and regulations regarding use, storage and transfer, as if the photo were taken by the GDP.

Photographs can better illustrate oral mucosal lesions and reduce the impact of inaccurate or insufficient written descriptions in referrals upon patient prioritisation and potential diagnostic delay. It is well-recognised that photographs are a useful referral addition in helping oral medicine consultants prioritise new patient appointments, which is especially true in cases of suspected oral cancer.[16] The accuracy of photography has also been evaluated, showing that the diagnosis of oral lesions using images taken with a smartphone has almost perfect agreement and diagnostic accuracy comparable to face-to-face diagnosis.[17] Despite these clear benefits of including photographs, only 29.5% of GDP referrals to the oral medicine department in our study included photographs.

A diagnosis of malignancy following a referral being upgraded from routine to the USC pathway is, thankfully, rare. Often, lesions that sound concerning from a description in a referral are subsequently diagnosed as benign or common conditions,

such as normal anatomy, traumatic ulceration and oral lichen planus.[3] Clinical photographs as an adjunct to referrals are likely to prevent these from being unnecessarily upgraded. This service evaluation further highlighted the necessity of these photos, as 80% of referrals upgraded to USC had a photograph included which exhibited clinical features of possible malignancy. Of the five referrals upgraded to the USC pathway at the triage stage, four included a photograph, and the photograph was the decisive factor for upgrading three of these referrals, demonstrating the inadequacy of relying solely on a clinical description. Without a photograph, these referrals would not have been upgraded, and these patients would have waited 69 weeks for a routine appointment (at the time of the study), meaning if malignancy was present, the diagnosis would have been significantly delayed, likely resulting in a poorer prognosis.[18]

Having the ability to issue advice and reject referrals through the e-RMS system is a cost-effective process as it does not utilise a secondary care appointment unnecessarily. This helps to reduce unnecessary costs to the NHS, unnecessary burden on the department, and keep waiting lists manageable, all whilst the dentist and patient have the reassurance of the diagnosis and its appropriate management. For the patient, it means they do not require time off work, and for some, NHS transport is not needlessly utilised. It also empowers dentists to provide appropriate care for their patients, as well as indirectly educating them, so they may feel confident to carry out the management of similar cases in the future.

Conclusion

A good-quality clinical description that details the dentist's concerns is the most important information in a referral to ensure timely assessment occurs in secondary care, but the inclusion of a photograph can greatly benefit the referring dentist, vetting clinician and above all, the patient.

A photograph can often make up for inaccurate or insufficient clinical descriptions in referrals and, most importantly, can result in upgrading of referrals for a suspected malignant diagnosis where the referring dentist has failed to recognise the urgency of the situation.

In addition, photographs included with referrals can prevent unnecessary referral upgrades; ensure an appointment in secondary care is actually necessary; ensure this is an appropriate use of NHS appointments and the patient's time; and can be invaluable as a baseline comparator at a secondary care appointment, or for diagnosis where lesions have resolved or are temporarily absent at the time of the secondary care consultation.

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