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Analysis of UK eye casualty presentations

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ABSTRACT

Clinical relevance: Optometrists upskilling and participating in enhanced optometric schemes has the potential to improve service accessibility and alleviate pressure on hospital eye services.

Background: There is a growing demand for eye care in the UK with rising hospital attendances thought to be due in part to an ageing population and a shift in behaviour to favour emergency secondary care.

Methods: Records of first-time presentations to the eye casualty department at the County Hospital (Wye Valley NHS Trust), Hereford, UK, over a month were analysed retrospectively and sequentially. The proportion of patients from optometrist referrals with conditions potentially requiring pharmacological intervention, that could have been retained within community optometry by an independent prescriber, was assessed. For general practitioner and self-referrals, the reasons for visit were compared to the Minor Eye Conditions Service criteria for inclusion. Patient conditions reviewed at the hospital following their initial presentation were grouped according to those who could have been discharged to a commissioned optometric service.

Results: The records of 421 patients were organised by the source of referral and condition diagnosed by the hospital practitioner. Thirty-three percent of optometrist referrals could have been managed by an independent prescribing optometrist. Ninety-two percent of patients presenting from general practitioner referrals and 83 percent of self-referrals could have been assessed via the local optometric scheme. Sixty-six percent of patients attending hospital for follow-up could have been seen within the community.

Conclusion: The present analysis highlights the value of commissioned local optometric community services to address acute ocular symptoms and the value of an independent prescribing qualification in helping to further alleviate the burden on hospital emergency eye services. The large number of self-referrals suggests that the general public needs to be further educated on services that are available at a community optometry level.

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Introduction

According to the annual publication on Accident and Emergency activity in English National Health Service hospitals, there were 23.8 million attendances in during the financial year ending March 2018 – an increase of 22% compared to the period ending 2009. Approximately 3.2% of Accident and Emergency diagnoses reported in the periods September 2017 to March 2018 were ophthalmology-related.¹

The Way Forward project, commissioned by the Royal College of Ophthalmologists, highlights the growing demand for emergency eye care with rising attendances thought to be due in part to an ageing population and a shift in health seeking behaviour to favour emergency secondary care.² It is thought that the 2004 change to the General Practice out-of-hours contract and the implementation of the four-hour wait target contributed to Accident and Emergency becoming the perceived primary route for emergency care by patients.²

The current (pre-COVID-19 pandemic) service design at the County Hospital's eye casualty department, Hereford, UK, is a daytime walk-in service and has taken on the organisational strategy to manage demand by recognising the benefits of utilising optometrists within the community who demonstrate the initiative to upskill. The Hereford County hospital part of the Wye Valley National Health Service Trust is one of the smallest rural district general hospitals in England and has seen an average of 5,664 eye casualty

attendances each year over the last five years (Egton Medical Information Systems Health UK, 2018).

The role of optometrists is changing with practices choosing to participate in locally commissioned National Health Service (NHS) funded intermediate-tier services, and optometrists undergoing further training to extend their therapeutic prescribing capabilities. The Commission on Human Medicines made it clear that the extent of Independent prescribing (IP) for optometrists would be supported by clinical management guidelines from the UK College of Optometrists, which are regularly updated.³

The Minor Eye Conditions Service (MECS) was designed to improve patient access to optometric assessments of acute eye conditions, reduce unnecessary referrals to the hospital eye service, and increase capacity within the overburdened hospital emergency services.⁴ Examples of conditions seen under MECS are sudden onset flashing lights and floaters, various manifestations of ocular surface disease (ranging from minor blepharitis to infection and ulceration and acute red eye (requiring differential diagnosis). Patients presenting to their general practitioner with an eye problem and satisfying specific inclusion criteria are referred to accredited community optometrists. There is no requirement for those optometrists participating in the scheme to be IP qualified. The scheme also allows patients direct access to an accredited optometrist without a general practitioner referral.

The purpose of this audit was to determine how many people presenting to the eye casualty department at the County Hospital, Hereford, UK, could be managed in community optometric practice under MECS, and how many people presenting to eye casualty could be reviewed within the community.

Methods

Records of first-time presentations to the eye casualty department at the County Hospital, Hereford, UK, for a one-month period were analysed sequentially. Triage nurses document by hand all presentations to the department in a large bound book including details such as date seen, source of referral, the patient name, the patient identifier number and consultation outcome. The month of January was randomly selected, but for this month data were readily available for the purposes of this audit. Furthermore, January enables the audit to avoid seasonal anomalies that could occur due to allergy season or vacation periods.

The anonymised data collected was organised by source of referral and condition diagnosed by the hospital practitioner. The proportion of patients from optometrist referrals with conditions that could be treated with pharmacological intervention according to the College of Optometrists clinical management guidelines was assessed. For general practitioner and self-referrals, the reasons for visit were compared to the MECS criteria for inclusion (Table 1) to determine the proportion of patients that potentially could have been retained within the community.

Unpublished data from the eye casualty shows that the number of referrals to the department were rising year on year by around 10%, but the introduction of MECS stopped this rise and in fact reduced the number of presentations by around 5%. The purpose of this study was to investigate some of the reasons for this. Patient conditions reviewed at the hospital following their initial presentation were grouped according to those who could have been discharged to optometric services.

This analysis received approval from the Life and Health Sciences Ethics Committee at Aston University and adhered to the tenets of the Declaration of Helsinki.

Results

In the month of January 2018, there were 581 presentations to the County Hospital's eye casualty department. Data

analysis was carried out on 421 records and 160 records were excluded.

Records were excluded if they were not first-time presentations and were follow-up appointments ($n = 128$), and if there were administrative errors such as incomplete notes, no scanned notes available or repeat entries ($n = 15$). Other entries were excluded from the analysis because they were illegible ($n = 12$) or because the patient did not wait to be seen ($n = 4$). One record was excluded because it represented an existing glaucoma patient attending eye casualty to enquire about the use of prescribed hypotensive eye drops.

There were 207 (49.2%) females and 214 (50.8%) male first-time presentations. The mean, median and mode ages, respectively, were 53.7 ± 22.5 , 58 and 68 years, and the age of patients ranged from six months to 102 years. There were 32 patients under the age of 16, and a similar number of patients aged 16-60 ($n = 193$) and those aged over 60 ($n = 196$).

A large proportion of presentations were self-referrals ($n = 303$), with general practitioners ($n = 50$) and optometrists ($n = 51$) accounting for about 12% each of emergency referrals (Figure 1). The remaining sources of referrals from the Hereford County Hospital were as follows: general accident and emergency department ($n = 9$); other wards ($n = 4$; paediatrics, clinical assessment unit, neurology); and other hospitals ($n = 4$). The majority of cases were seen by ophthalmologists not in training ($n = 222$), followed by ophthalmologists in training ($n = 140$), independent prescribing optometrists ($n = 42$), consultant ophthalmologists ($n = 16$), and one unknown (Figure 1).

The conditions seen and diagnosed in eye casualty as a result of optometric referral are shown rather than the provisional diagnoses from optometrist referrals, as the original referral letters were not scanned to the records and the suspected diagnosis from the optometrist was not always listed (Figure 2). Identified with asterisks in Figure 2 are the conditions that could be treated with pharmacological intervention, which an independent prescribing optometrist could initiate according to the College of Optometrists clinical management guidelines at the time of the analysis, and this made up 33% (17/51) of cases. That is not to say that contact lens-related ulcers could not be managed by an optometrist or independent prescribing optometrist; depending on the location and size of the infiltrate, it may be more appropriate to refer suspect microbial keratitis

Table 1. Minor eye conditions service criteria set by the local optical committee support unit at the time of the analysis.⁴

Inclusion if symptoms experienced within the last two weeks	Inclusion if symptoms experienced within the last six weeks	Exclusion criteria
Loss of vision including transient loss	Flashes and floaters	Use of the scheme to claim for cases of diabetic retinopathy
Foreign body and emergency contact lens removal (not by the fitting practitioner)		Adult squints, longstanding diplopia
Sudden onset of blurred vision but always consider if a sight test would be more appropriate		Repeat visual field tests to aid diagnosis following an eye examination
Ocular pain or discomfort		
Systemic disease affecting the eye		
Differential diagnosis of red eye		
Dry eye		
Epiphora		
Trichiasis		
Differential diagnosis of lumps and bumps in the vicinity of the eye		
Recent onset diplopia		
Retinal lesions		
Patient reported field defects		

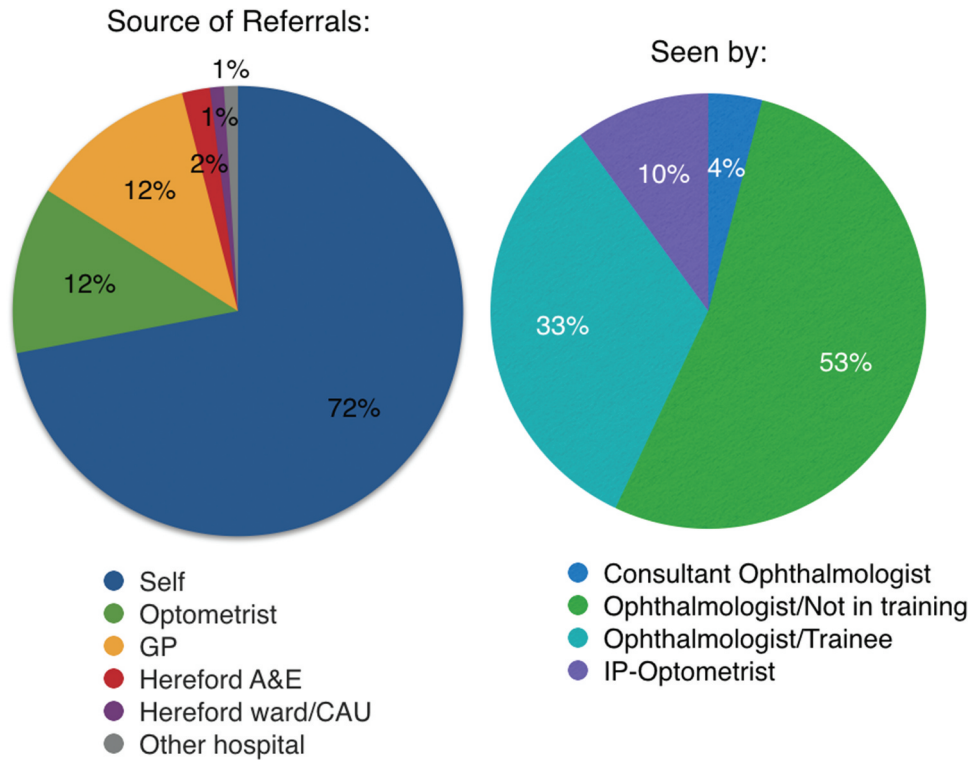


Figure 1. Distribution of source of referrals to Hereford County hospital eye casualty department in January 2018 and of the eye care practitioners managing first-time presentations to the department. A&E = Accident and Emergency, CAU = Clinical Assessment Unit, GP = General Practitioner, IP = Independent Prescribing.

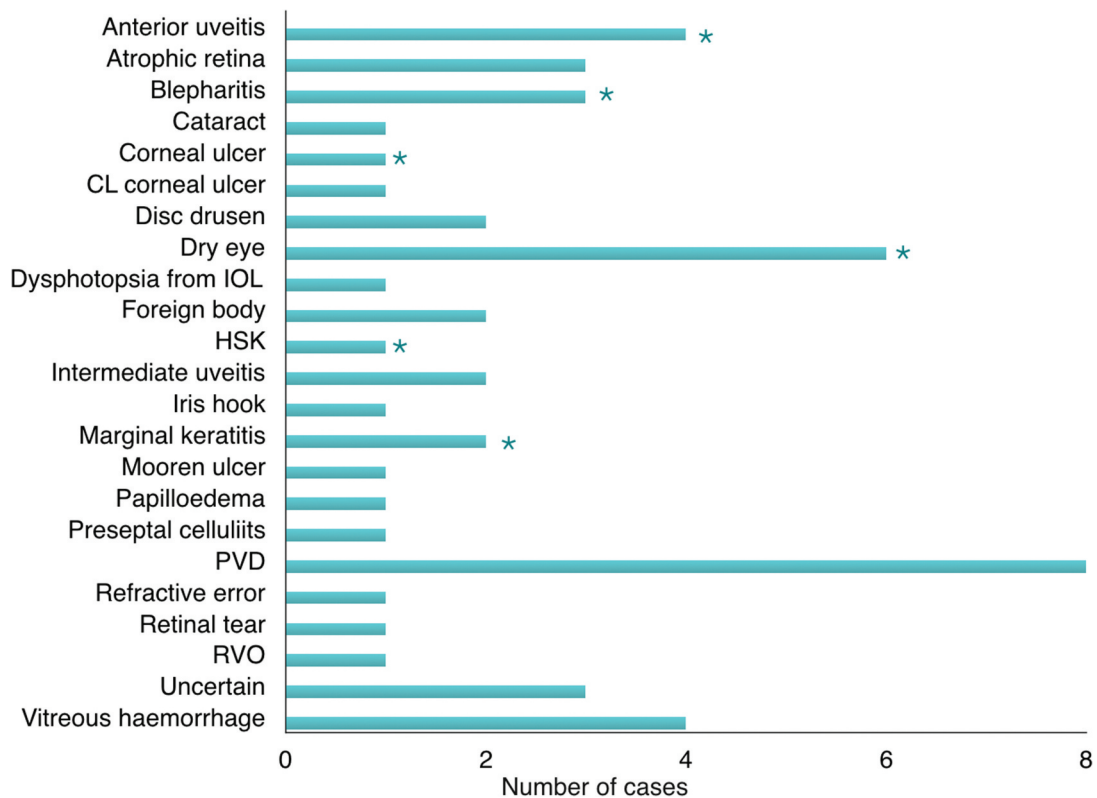


Figure 2. Conditions diagnosed in Hereford County hospital eye casualty department as a result of optometric referral. Identified with an asterisk (*) are the conditions that could be managed with pharmacological intervention potentially by an IP optometrist, making up 33% (17/51) of cases. HSK = herpes simplex keratitis, PVD = posterior vitreous detachment, RVO = retinal vein occlusion.

cases in contact lens wearers to eye casualty for a corneal scrape for culture and determination of antibiotic sensitivities.

A foreign body could also be managed in the community by an optometrist or independent prescribing optometrist if they

are confident to do so, have a means to dispose of sharps if hypodermic needles are used, and the foreign body has not penetrated into the stroma. Following the removal of the foreign body the optometrist could advise on the use of ointment for ocular lubrication or consider over-the-counter topical antibiotic

prophylaxis which would not require an independent prescribing qualification.

Of the conditions that could have been treated by an independent prescribing optometrist, assuming agreement on diagnosis between hospital and community practitioners, 59% (10/17) of cases were treated with prescription medication. The conditions treated were blepharitis, anterior uveitis, non-contact lens-related corneal ulcer, herpes simplex keratitis, and marginal keratitis. Also, there were no medications prescribed for dry eye that were not available over the counter, aside from one case where Pilocarpine 1% was prescribed for a secondary eye condition.

Conditions diagnosed as a result of general practitioner referrals are represented in Figure 3. It was determined that 92% (46/50) of patients presenting to eye casualty from general practitioner referrals could have been seen by an optometrist via MECS. Based on the diagnosis in secondary care against the clinical management guidelines of the College of Optometrists, it was determined that 57% (26/46) of the 92% could have been managed by an optometrist and a further 13% (6/46) if pharmacological intervention was required and the optometrist was qualified for independent prescribing.

An additional 30% (14/46) would have been referred to ophthalmology although perhaps not needing assessment on the same day. These cases included the following diagnoses from eye casualty: vitreous haemorrhage, non-arteritic anterior ischaemic optic neuropathy, unexplained new onset diplopia, periorbital cellulitis, suspect giant cell arteritis, optic neuritis, acute dacryocystitis in a child, ectropion (routine), and microbial keratitis.

It was determined that 83% (253/303) of patients presenting to eye casualty from self-referrals could have been seen

on the MECS scheme as a first-port of call, with only 17% (50/303) of cases requiring onwards referral to ophthalmology after considering the diagnosis in secondary care against the clinical management guidelines of the College of Optometrists (Figure 4). Disorders of the cornea ($n = 52$) made up the majority of cases followed by trauma ($n = 42$), the miscellaneous category ($n = 30$), disorders of eyelids ($n = 29$) and posterior vitreous detachment ($n = 29$).

The miscellaneous category included the following diagnoses from eye casualty: vitreous haemorrhage, wet and dry age-related macular degeneration, toxoplasmosis, shingles, skin rash, third nerve palsy, Bell's palsy, bilateral diplopia, branched retinal vein occlusion, cataract, Cobb's tufts, conformer replacement, diabetic maculopathy, intra-dermal naevus, iris naevus, ocular migraine, papilloedema, and retrobulbar haemorrhage.

Notably, there were 22 cases (7.3%) that showed no abnormality with presenting symptoms ranging from intermittent headaches, intermittent loss of vision, requesting for prescription of repeat glaucoma drops, and ocular discomfort.

After analysing the outcomes, it was found that 59% (247/421) of first-time presentations to eye casualty were discharged after their initial visit, 22% (92/421) were referred for follow-up to a specialist or general clinic, and 19% (82/421) were given appointments for follow-up in eye casualty. Conditions that were discharged included chalazion, blepharitis, dry eye and Meibomian gland dysfunction, subconjunctival haemorrhage, episcleritis, viral and bacterial conjunctivitis, corneal abrasion, recurrent uveitis, mild post-operative inflammation, and posterior vitreous detachment. Other cases discharged were those relating to chemical trauma due to hair dye and nail glue, blunt trauma, and foreign body and rust ring removal.

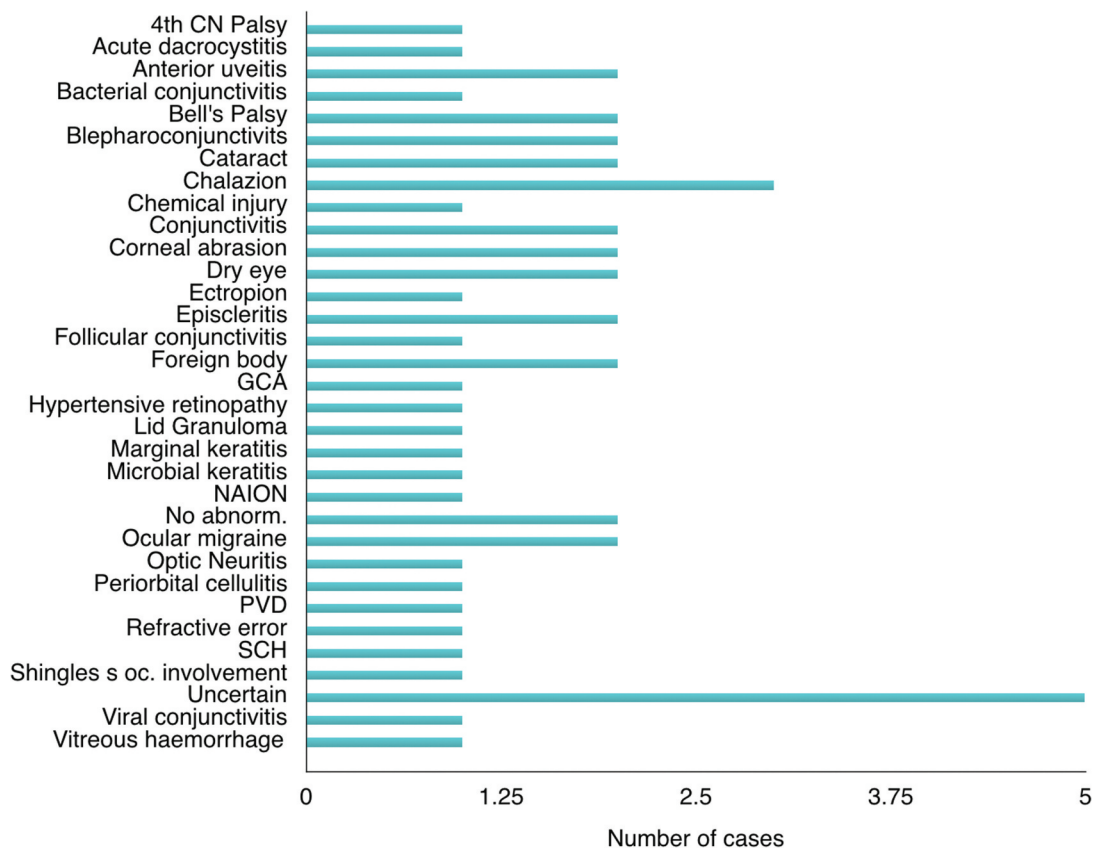


Figure 3. Conditions diagnosed in Hereford County hospital eye casualty department as a result of GP referral. CN = cranial nerve, GP = general practitioner, GCA = giant cell arteritis, NAION = non-arteritic anterior ischaemic optic neuropathy, No abnorm = no abnormality, PVD = posterior vitreous detachment, SCH = subconjunctival haemorrhage, s oc. = without ocular.

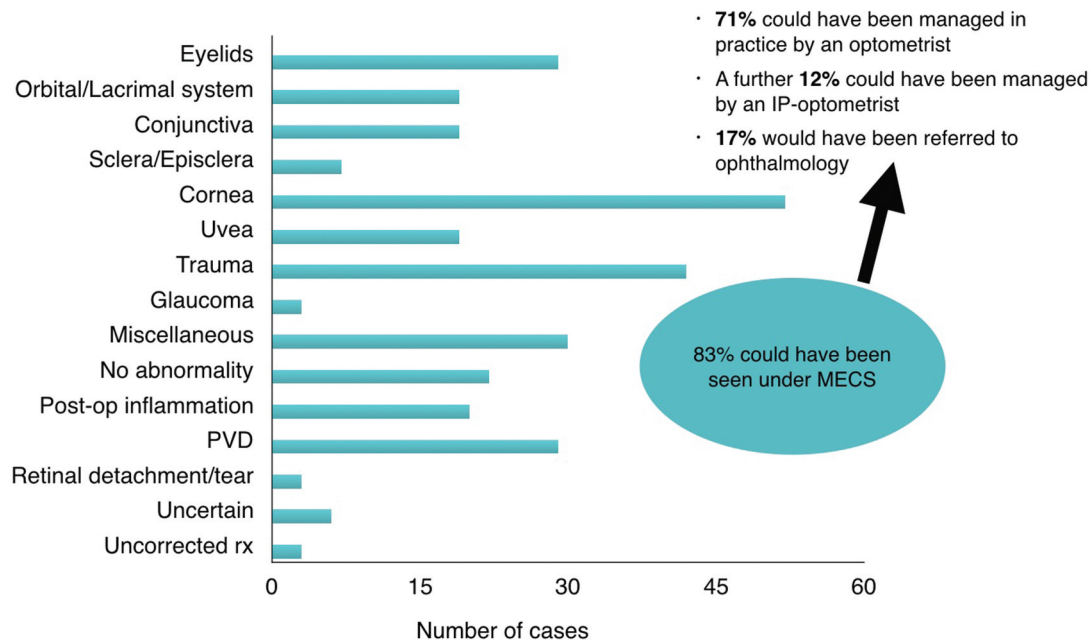


Figure 4. Conditions diagnosed in Hereford County hospital eye casualty department as a result of self-referral. Analysing the patient reported reason for visit and diagnosis in eye casualty against criteria for MECS inclusion revealed 83% of first-time presentations could have been seen by an optometrist in the community first. Of the 83%, 83% could have been managed by an optometrist and 17% would have been referred to ophthalmology although not all same day referrals. MECS = Minor Eye Conditions Service.

Cases that needed review in eye casualty were grouped into those conditions that were suitable to be seen by an ophthalmologist, optometrist or independent prescribing optometrist. It was determined that about 66% (54/82) of patients attending eye casualty for follow-up could be seen within the community for example, review of resolving recurrent uveitis. Subdividing review cases that could be seen within optometric community practice into independent prescribing and non-independent prescribing optometrists as well as considering cases where repeat prescriptions and co-management with ophthalmology may be required, 49% (40/82) of conditions would potentially require an independent prescribing qualification to manage.

The conditions requiring follow-up in eye casualty that could potentially be managed in the community were anterior uveitis, corneal abrasions for example following foreign body removal, corneal ulcer, episcleritis, and marginal keratitis.

Discussion

The majority of first-time presentations to eye casualty from general practitioner and self-referrals could have been managed under MECS, and almost half of follow-up appointments scheduled in eye casualty could be reviewed by an independent prescribing optometrist within the community. Studies monitoring the activity and evaluating the clinical safety of enhanced service schemes similar to MECS have shown that over 66% of patients could be retained in community optometric practice.⁵⁻⁸

Criticism to the current analysis of MECS appropriateness and management by an optometrist within the community may include questioning whether in reality, the optometrist would arrive at the same diagnosis determined in secondary care and manage the patient appropriately. Provisional diagnoses were not always documented from optometrist referrals to eye casualty. Same day referral letters were not scanned to allow an analysis of potential areas for further optometric training or areas

where optometrists lack confidence. Variations in presenting signs of cases affect the final clinical decisions on suspected diagnosis and management, which in turn reflects clinical expertise; this could not be captured in the current analysis.

There is evidence to suggest that clinical decision-making by optometrists and independent prescribing optometrists working in hospital emergency settings is concordant with consultant ophthalmologists.^{9,10} There is currently little information on the agreement in clinical decision-making between (a) independent prescribing optometrists working in the community who may be participating in MECS, and (b) consultant ophthalmologists in an emergency eye department to develop the evidence base to validate the role of independent prescribing optometrists in retaining patients within the community safely.

Community versus hospital optometrists have challenges that may affect their clinical decision-making including time constraints related to clinical chair time, and commercial pressures. A qualitative study found further professional development was noted as the most common reason given by optometrists for participating in enhanced schemes whilst non-participation was due to perceived incompatibility of the service with the business model in a retail-focused practice.¹¹ MECS is designed to reduce ophthalmology referrals with an average referral rate of about 19% reported in the UK.^{6,12} Participation in appropriately funded emergency eye care schemes provides community optometrists experience in acute pathology, and a means to grow their business' reputation and perhaps profitability.

It has been shown that more than 50% of general practitioner referrals to eye casualty departments do not constitute true emergencies.¹³ There was a high proportion of non-urgent referrals to eye casualty from general practitioners noted in this analysis, although they made up a similar proportion to optometrist referrals in terms of source of referral for first-time eye casualty presentations (12%). It is estimated that approximately 2% to 4% of general practitioner consultations relate to

ophthalmic concerns with more than 70% representing cases of bacterial conjunctivitis, allergic conjunctivitis, meibomian cyst and blepharitis.^{14–16}

Conditions affecting the lids, tear ducts, and conjunctiva were the most common cases referred to ophthalmology by general practitioners with general practitioners referring more false positive cases than did optometrists, and having a higher prescribing rate.^{15,17,18} The traditional relationship between general practitioners and optometrists was a one-way flow with optometrists referring to general practitioners who would coordinate onwards referral to ophthalmology. Enhanced eye care services are helping to change the direction towards optometrists as the first port of call for eye problems considering the lack of specialist ophthalmic equipment in surgeries, and generalist training.

Greater levels of general practitioner engagement in commissioned enhanced service schemes could result in a higher proportion of patients being retained in community optometric practice. The level of general practitioner engagement in enhanced optometric services is varied with an evaluation of the Somerset Acute Community Eye-care Services reporting general practitioner confidence at 89.4%, whilst an audit in Bromley showed a significant number of general practitioners were not engaging with a total of 62.5% of practices using the service 10 times or less.¹² An understanding of reservations from general practitioners about using MECS would be useful considering it has been shown that despite scientific evidence, it is challenging to change the beliefs and prescribing habits of general practitioners.^{19,20}

A survey of general practitioners in South London which focused on MECS found the majority favoured assessment of patients presenting with ophthalmic complaints by an optometrist especially for diagnosis of presentations with red eyes, flashes and floaters where use of specialist skills with slit lamp and fundoscopy were required.¹¹ The general practitioners surveyed also saw the value of the scheme in improving care and accessibility, reducing waiting times, and potentially reducing their workload.¹¹ Red eye, painful white eye, flashes and floaters and loss of vision have been reported as the commonest reasons for a MECS assessment.²¹

An outcome of a MECS assessment could be a referral to a surgery for systemic investigations with referral rates reported at 5.7%, 8.63%, and up to 16%.^{5,6,12} Engagement of general practitioners in communicating follow-on management decisions from optometric MECS referrals would help enhance the quality of future referrals and aid practitioner confidence for better patient care.

Self-referrals accounted for the largest source of referrals to eye casualty in this analysis, at 71%. Studies have shown 50–70% of people attending eye casualty departments are non-urgent cases.^{13,22–24} Reasons cited for patients deciding to present at emergency departments rather than their general practitioner surgery include anxiety, depression, convenience and accessibility.^{25,26} Self-referral to casualty is the norm in most hospitals and not just eye casualty.

If the efficiency suggested by this study is to have greater impact and provide an alternative to eye casualty for many patients, then this would need to be better communicated to patients in the future. Patients will need to be educated that many of their eye problems may be dealt with by community optometrists, especially knowing which practitioners have additional independent prescribing rights, and will be able to prescribe required medication.

The global pandemic of 2020 has seen the introduction of more telemedicine and patients being triaged by phone-call or video-call, and this may be a way to divert more patients away from casualty departments and direct them to community care. Hereford County eye casualty is considering steps to introduce protocols to refer presenting patients to community optometrists. Only when patients, general practitioners and eye casualty work together and feel confident in the services that optometrists can provide will an impact be felt in reducing unnecessary referrals to secondary eye care.

From the perspective of patients, the most common overall reason for attending eye casualty was 'great concern', whilst 'convenience' and 'unable to wait for a general practitioner appointment' were also common justifications in the cases deemed non-acute by the authors of the Moorfields study.²⁷ The stress and anxiety associated with the prospect of visual loss, blindness and the possible disfiguring nature of inflammatory eye conditions can evoke levels of anxiety seen in patients with diagnoses of melanoma, acquired immunodeficiency syndrome and requiring bone marrow transplantation.²⁸

The findings from Hau et al.²⁷ suggest that patients view eye casualty not only as a place for emergencies, but for obtaining prompt treatment and second opinions for non-sight threatening complaints because of 24-hour accessibility and the convenience of not requiring a scheduled appointment. In the current analysis, 7.3% of self-referrals showed no abnormality, highlighting the use of the walk-in service for reassurance regarding sporadic concerns.

Referrals to MECS and MECS follow-up appointments for eye casualty provide an opportunity for community optometric practices to improve patient accessibility and work within a wider scope of practice. The overall cost effectiveness and patient satisfaction in relation to enhanced service optometric schemes have been reported.^{11,29–31} Studies monitoring the activity of MECS have shown that 8.7% and up to 22.13% of patients are followed up within the community predominately for reviewing cases of minor trauma, and red eye.^{6,12}

From the current analysis, it was determined that about 66% of patients attending eye casualty for follow-up could have been seen by an optometrist within the community for example, to monitor resolving recurrent uveitis. An independent prescribing qualification is required in those cases where a repeat or changed prescription may be required and monitoring of the condition to resolution can be managed by a community optometrist. The overall cost effectiveness and patient satisfaction for independent prescribing optometrist led schemes are yet to be reported in the literature.

Progress has been made with the local Clinical Commissioning Group agreeing to directly fund optometric monitoring of stable glaucoma and MECS follow-up appointments for eye casualty. More research is required to investigate how MECS affects demand and supply in the wider healthcare system, and concerns regarding overcapacity and inadequate remuneration. Perhaps community independent prescribing optometry needs a specific funding source and a culture shift whereby non-independent prescribing optometrists as well as general practitioners and pharmacists refer to independent prescribing optometrists. This is needed in order to build competence that could weaken if patient numbers are low, increase scope of practice and avoid overburdening secondary care. Ongoing structured training is important in producing and maintaining a high standard of care on MECS.

Conclusion

In Herefordshire, the Ophthalmology Transformation Group involving the Wye Valley Trust, the Local Optical Committee and the Clinical Commissioning Group intends to expand the existing commissioned optometric schemes to decompress the demand on secondary care services into the community.

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Disclosure Statement

No potential conflict of interest was reported by the author(s).

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