The ROYAL COLLEGE of OPHTHALMOLOGISTS

The Way Forward

Options to help meet demand for the current and future care of patients with eye disease

Emergency Eye Care

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The Royal College of Ophthalmologists commissioned this project as there is increasing awareness that **the number of patients with diseases of older age is growing across the United Kingdom (UK) without a commensurate growth in the number of ophthalmologists and other resources available to treat those patients.**

New ways of working are not the solution, but do form part of it

Some eye departments or sub-specialist services in a department may still be meeting demand with traditional models of service delivery, but increasingly, the challenge that our growing elderly population presents will lead to decompensation of those services as capacity simply cannot keep pace with demand. This project aims to capture some of the innovations and service redesigns from different units around the UK, and to present these options to consultant colleagues who are wishing to improve efficiency, and create a service to help meet the growing disparity between demand and resource. **These new ways of working are not the solution, but do form part of it. More ophthalmologists, more eye health care professionals (HCPs), more space, more resource as well as more efficient ways of working are urgently needed.**

Peer reviewed and grey literature were searched, and **telephone interviews conducted with more than 200 consultants** leading their services in order to capture and discuss their ideas and innovations for this report. It is clear that one size will not fit all, however it is equally clear that every eye department is going to have to progress to new models of working, and insights are available from those who have already undertaken to reconfigure their services in a way that permits more patients to be seen.

The Way Forward project aims to equip ophthalmologists with tools to estimate and evaluate the size of the growth in demand that can be expected over the next 20 years, and most importantly, to offer some practical options for dealing with that growth gleaned from what our colleagues in other departments around the country are already doing. The project also aims to provide a substrate and mechanisms for practical peer support and networks where possible. In addition the advice in the documents aims to be in line with the RCOphth sustainability objectives (appendix D).

Members can email: wayforward@rcophth.ac.uk for more information.

Emergency Eye Care

The growing demand for emergency services

For more than a decade, general Accident and Emergency (A&E) services have seen annual increases in demand. Prior to 2004, a fairly steady state of around 14 million annual attendances at A&E departments is described (figure 1). A shift towards separating out those patients attending A&E who could be classified as minor injuries to be seen in Minor Injuries Units (MIU) (often co-located with major A&E) or Walk In Centres (WIC) complicates the data, but what is clear is that a change in health seeking behaviour occurred around this time.[3]

In 2004 the General Practice (GP) out-of-hours contract was changed. About 90% of GP practices opted to sacrifice £6,000 salary in order to give up responsibility for out-of-hours services, hence patients were no longer able to get an appointment with their own GP acutely, making this a less attractive route of accessing emergency care. This coincided with A&E becoming a more attractive option with the implementation of the 4-hour wait target.

Figure 1: Annual Accident and Emergency Attendances 1987-2013 (source: Kingsfund.org.uk)

The increase in patient numbers, alongside the strong political commitment to the 4-hour wait target has mean that medical staff numbers in main A&E have risen by 71% from 3,183 in 2002 to 5,437 in 2012.[4]

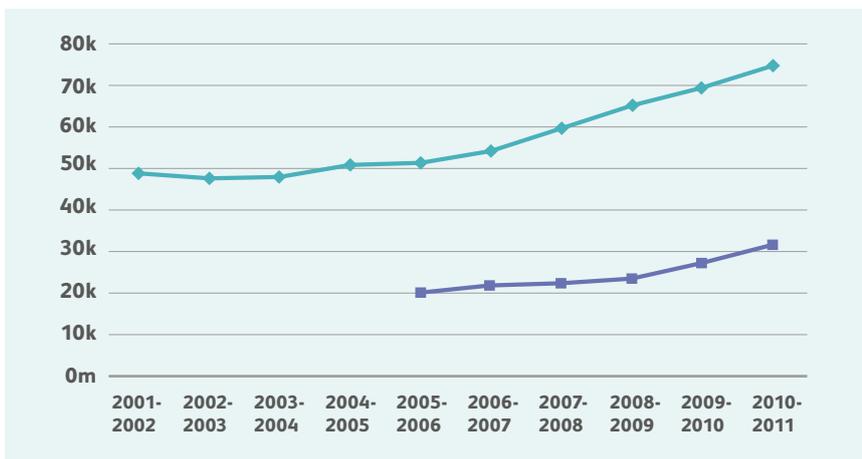## The growing demand for Emergency Eye Care services

There would be some reason to expect the number of eye emergencies to be rising merely due to changing demographics. The national and international population changes are well known; there are more people, and those people are living longer. Hence with many eye diseases rising sharply in prevalence with increasing age, the effect on ophthalmic services overall is clear, being described by The Royal College of Ophthalmologists (RCOphth) president, Prof Carrie MacEwen, as "a perfect storm of increased demand, caused by more eye disease in an ageing population requiring long term care".[5]

"a perfect storm of increased demand, caused by more eye disease in an ageing population requiring long term care"

Although there may be a trend to increase outpatients attendances generally which will include emergency attendances, the observed growth in Emergency Eye Care services demand in the UK cannot be explained by the demographic shift alone, but is more in keeping with the rise seen in general A&E numbers driven by shifting health seeking behaviours.

The rises in the numbers attending large walk-in Emergency Eye Care services mirror those from general A&E departments. Figure 2 shows the data presented from two units in London.[1] The numbers for the Moorfields eye casualty have continued to grow with >100,000 attendances in 2015/16, representing a doubling of patients in 10 years (*personal communication, Miss S Verma*).

"the more capacity you provide, the more they will come"

Figure 2: Eye Casualty attendances in two large London walk-in services 1

Not all departments are able to run such 24 hour walk-in services, and although it is less intuitive that the same growth in numbers would be observed in Acute Referral Clinics (ARC) or daytime walk-in services, this has nonetheless been widely reported. The units who were able to provide data for the past few years all show the same trend to increase in numbers (figures 3-6). Some consultants interviewed, however, did report that they were successfully holding their acute attendance numbers steady by creating only a fixed capacity, beyond which patients are therefore directed to general A&E services, clinic referrals or go into the ophthalmology on-call service. Capping numbers to fit with service capacity rather than being demand driven was seen as desirable by some; "*the more capacity you provide, the more they will come*" (EEC 20– this is a unique interview code to permit anonymised reference to information gathered with consultant interview for The Way Forward project).
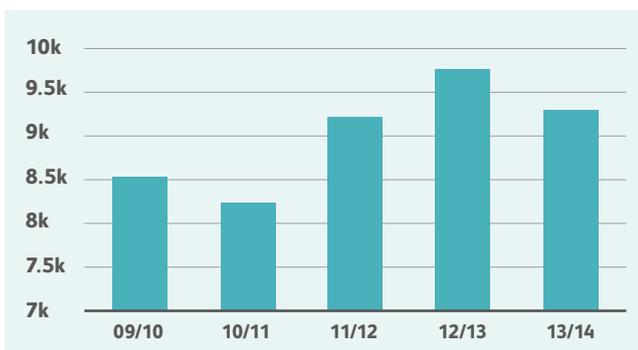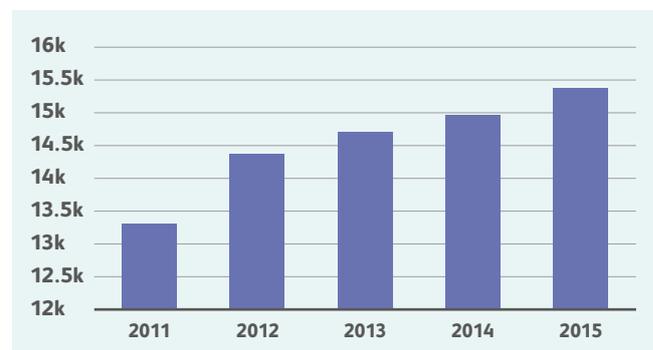

Figure 3: ARC serving 750,000 (EEC 9)

Figure 4: Daytime walk-in serving 1 million (EEC 13)

It has been observed in general A&E that junior doctors are slower and more cautious than they used to be, with junior A&E doctors being recorded as seeing 17% fewer patients per hour over a 3 year period.[6] The perception that ophthalmic trainees are slower than previous generations and the tendency of junior ophthalmologists to excessively follow up patients was often reported. The rising numbers in Emergency Eye Care clinics could be conjectured to be attributable to more follow-ups, as access to sub-speciality clinics is limited and the "general" clinic is becoming a rarer entity. However, one unit provided 10 years of data from their ARC showing the growth to be due to new patients rather than reviews (figure 5).
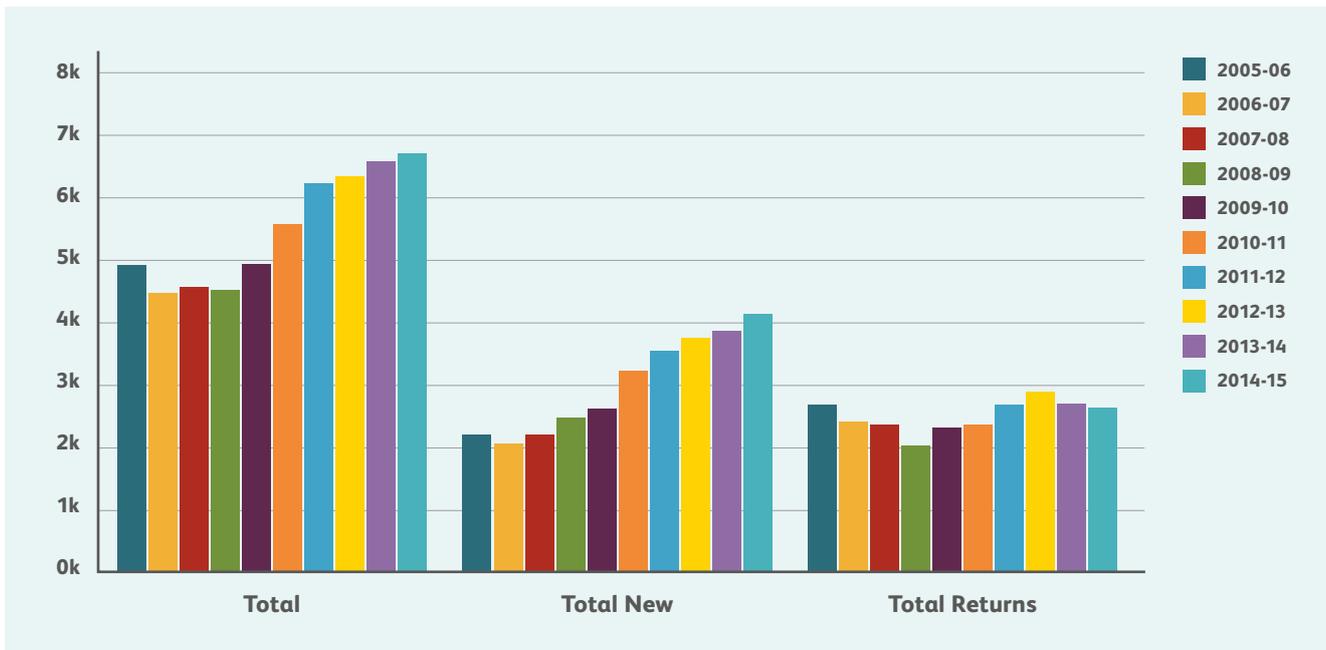
Figure 5: Ten year data 2005-2015 from Urgent Referral Clinic serving 350,000 (*EEC 26*)

The nature and complexity of the patients attending Emergency Eye Care services will vary according to the accessibility and referral processes, but it seems beyond question that there is a national trend that mirrors that seen in general A&E departments. Walk-in services attract more patients, and many reported trying to control numbers by moving from walk-in to an acute referral service. Figure 6 shows data for a unit serving 500,000 population that had been running a daytime walk-in eye casualty; an attempt to reframe the service as an ARC in the middle of this data series did not prevent continued growth (*EEC 50*); changing patient and primary care practitioner behaviour is less easy than renaming the clinic.
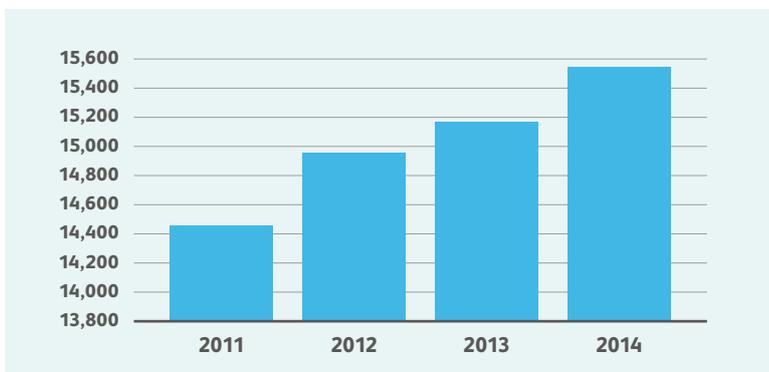

Any eye condition that is of recent onset and is distressing or is believed by the patient, carer or referring health professional to present an imminent threat to vision or general health

Figure 6: Daytime walk-in ➝ ARC service for 500,000 population (EEC 50)

Will the upwards curve not plateau soon?

An urgent eye condition has been defined as "*any eye condition that is of recent onset and is distressing or is believed by the patient, carer or referring health professional to present an imminent threat to vision or general health*".[7] This therefore includes cases that ultimately transpire to be non-sight threatening or even trivial, but which are indistinguishable from serious pathology by the patient or referring practitioner. Surveys of patients presenting to emergency eye services repeatedly show very high proportions of "*unnecessary*" or "*inappropriate*" attendances,[8-12] however the great concern that surrounds eye or vision related presentations must be recognised,[13] and caution exercised when labelling a referral or self-initiated presentation as inappropriate.

Other than for those emergencies strongly linked to older age such as vasculo-occlusive events, vitreous/retinal detachments, acute angle closure or temporal arteritis, there is little reason to expect a rise in the actual prevalence of eye emergencies. In fact, there may be trends that are protective against eye emergencies such as progressive de-industrialisation and increased "screen time" for children in preference to outdoors play.

Attempts at estimating the incidence of urgent eye conditions using consultation rates as a surrogate have been made, and are presented in the joint RCOphth/College of Optometrists Urgent Eye Care commissioning guidance.[7] However, if the main societal shift causing increased emergency attendances is not prevalence, but a change in health seeking behaviour, then it is perhaps useful to quantify the pools of patients that might potentially migrate towards acute secondary care services (figure 7).

There were an estimated 438 million visits to a pharmacy in England for health related reasons in 2008/09,[14] which has been shown to be a cost-effective first port of call for minor eye symptoms.[15] Although we cannot quantify what proportion of pharmacy attendances were for eye related problems, the ~1 million bottles of chloramphenicol sold over-the-counter (OTC) each year in the UK gives some indication that the number of patients who could potentially abandon pharmacists and start seeking specialist secondary care emergency ophthalmology input instead is substantial.[16] The impact of making Chloramphenicol available OTC on secondary care is not known, but evaluations in Wales and Australia do not suggest it helped reduce the burden of eye presentations on primary care, so it can be conjectured to have had a similar lack of helpful impact on secondary care numbers.[17,18]
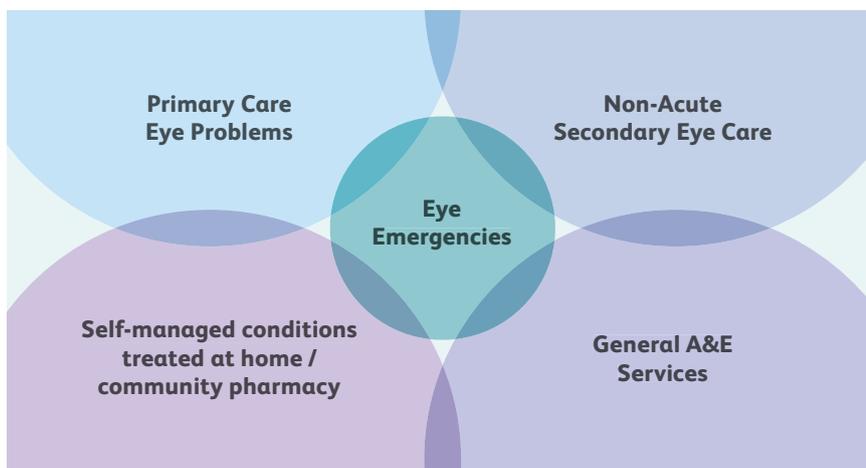

Figure 7: Patients who could migrate into emergency services

Approximately 16 million sight tests and/or eye examinations are performed by optometrists and Ophthalmic Medical Practitioners (OMP) annually in the UK.[19] Furthermore, there were an estimated 340 million GP consultations in 2012/13 and 1.5–2% of these were reported as eye related.[14,20] This again, therefore, represents a potential source for continued growth in eye casualty attenders. Likewise the 24 million calls made to NHS urgent and emergency care telephone services will harbour another population of eye related problems.[14]

If even small percentages of those who would have previously seen their pharmacist, their optometrist, their GP, phoned NHS advice lines or treated themselves at home, start seeking direct emergency attendances with secondary care in whatever form, the proportionate impact on a speciality like ophthalmology would be substantial and could fuel a continuation of the growth that we have experienced in the past decade.

So what? The implications of the national trend to increased Emergency Eye presentations

Calls from the RCOphth to have the numbers of Ophthalmology training numbers increased have fallen on deaf ears. Figure 8 from the Centre for Workforce Intelligence at Health Education England, 2014, shows the historic figures for numbers of ophthalmologists achieving Certificate of Completion of Training (CCT) annually (England only), and most importantly, the future projection based on historic recruitment to the specialty training programme is also presented. Even if a decision to increase the numbers of ophthalmic training posts was taken tomorrow, there would be a ten year lag phase for getting new consultants in place.

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Emergency Eye Care provision has been traditionally reliant on ophthalmologists in training, although some units have utilised associate specialist or staff grade (SAS) doctors. However, if neither junior ophthalmologist nor SAS numbers are looking set to rise, whilst the patient numbers show no sign of slowing their increase, eye departments across the UK are going to have to find new ways of delivering Emergency Eye Care to mitigate for this capacity/demand mismatch (figure 9).[21] The previous practice of importing ophthalmologists from around the world may be less easy as a global shortage of ophthalmologists is reported,[22] and there is recognition of the existence of ethical issues around attracting staff from the national health systems of countries with greater ophthalmic human resource problems than the UK.[23-26]
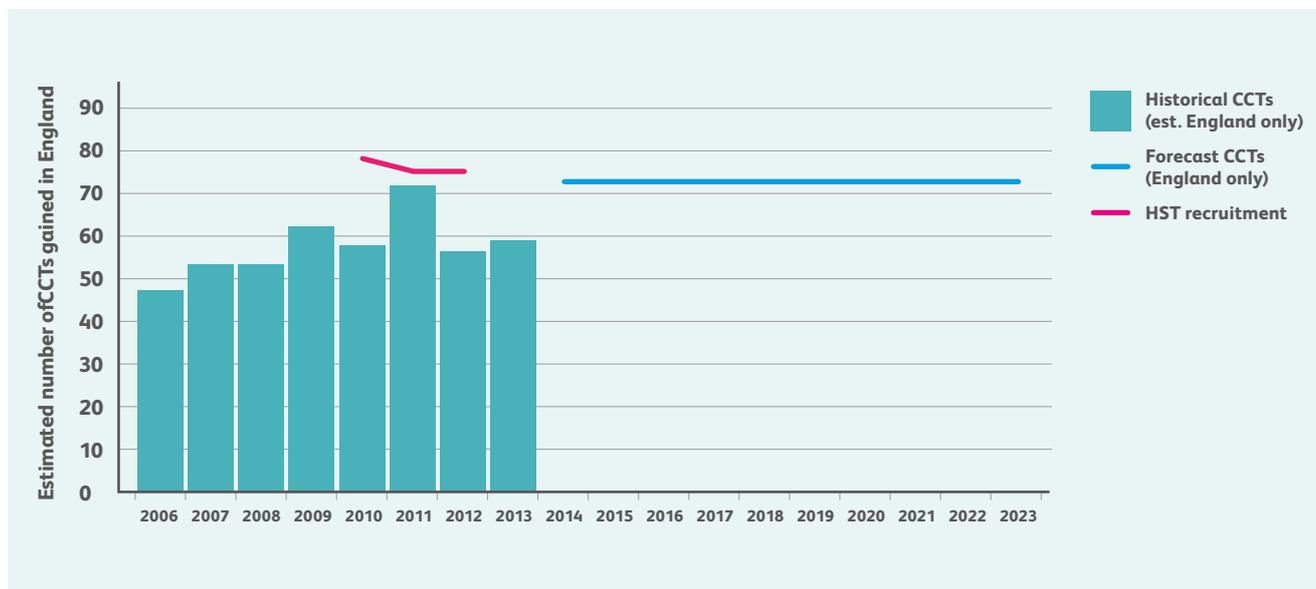

Figure 8: Certificate of Completion of Training awarded annually and future projection

The commissioning of The Way Forward project, the methodology for which is presented in appendix A, was driven by awareness of this need for us to consider how we might work differently along with the belief that many of the answers can be found by looking at what our colleagues in other units around the UK are already doing to overcome these problems.

Demand Reduction: Is there a role for prevention?

Whilst there are some notable examples where prevention is possible, the overall consensus from the RCOphth and College of Optometrists is that "*there is limited scope for preventing urgent eye conditions*".[7] Sports related ocular injuries form a relatively small proportion of all urgent presentations, but a greater proportion of those that are sight-threatening.[27,28] They are reported to be preventable in 90% of cases,[29] particularly for racket sports. Despite this knowledge and appropriate eye wear having been available for many decades, uptake has been poor.[30,31]

"there is limited scope for preventing urgent eye conditions"

Capacity Reduction	Demand Growth
• Less confident clinicians see patients more slowly • More tests, treatments and more sub-specialisation • No expansion of trainee numbers	• Main A&E de-skilled in eyes and under pressure of 4 hour target • Shift in health seeking behaviour to favour emergency secondary care • Reduced access to GP out-of-hours • More people / increased life expectancy

Figure 9: the capacity demand disequilibrium

Other interventions, particularly from the occupational health literature have been proposed, but reviewers rightly point out the paucity of evidence to support claims of effective reduction eye injuries from suggested strategies.[32-37] Major policy decisions that are felt to have reduced eye injuries such as the introduction of seatbelt laws or control on the sale of fireworks are beyond the influence of ophthalmologists, so there may be little that clinicians can contribute to safety promotion. Secondary prevention, by reminding patients presenting with foreign bodies to use eye protection in future, or to rehearse contact lens hygiene advice with those presenting with keratitis is intuitively advisable but has no evidence base to support its promotion.

Organisational strategies to manage demand

Demand Management: empowering general A&E services

Just as educating local optometrists can be demonstrated to reduce false positive referrals for glaucoma,[38] there are opportunities to reduce inappropriate referrals to Emergency Eye Care services. The proportion of A&E attendances having eye problems may be as high as 6% in some settings.[39] A&E practitioners have, however, not been confident with basic aspects of ophthalmic assessment (such as Visual Acuity measurement)[40,41] and lacking in training and skills in emergency eye care with variable availability of slit lamps and training in their use (which may, or may not be deemed necessary).[42,43]

With the rapid turnover of junior doctors in main A&E departments, it might be predicted that a low return will be seen on investing in their education regarding eye care, but guideline dissemination has been shown, in the short term at least, to successfully encourage improved examination and management by A&E staff.[44] A&E emergency Nurse Practitioners are a more stable workforce in A&E, MIU and WIC, and have been shown to be more reliable in evaluation and management of eye injuries than junior medical staff.[45] Educational intervention with A&E nurse practitioners may, therefore, provide greater benefit from the time invested.

Demand Management: empowering primary care practitioners

Upskilling of community optometrists and GPs is another obvious option to reduce emergency HES attendances. **Diagnostic algorithms have been produced and shown to be useful** in guiding General Practitioner's management of red eyes,[46] and significant national effort expended in Wales and Scotland to empower community optometrists to act as the primary reference point for acute eye problems.

The Wales Optometric Postgraduate Education Centre (WOPEC) provides the accreditation for practitioners wishing to provide Eye Health Examination Wales (EHEW) primary care eye services under the Wales Eye Care Services (WECS) umbrella. Community optometrists can apply to undergo training and accreditation to offer EHEW services so long as there is not more than one other provider within a 10 mile radius. WOPEC may also make their training, assessment and accreditation available to UK optometrists outside of Wales.

"Teach and Treat" centres in Scotland provide an on-going training resource for optometrists who can freely register to attend a series of sessions seeing emergency eye patients under the close supervision of an ophthalmologist and central funding is available for community optometrists to obtain Independent Prescriber status. One Scottish consultant, (*EEC 24*), with the advantage of a more empowered local optometric community, reported having transitioned their Emergency Eye Care service whose walk-in numbers had reached 18,000 annually to an ARC arrangement. The attendances were seen to fall from the pre-change level in 2012 ~18,000/year, to 10,851 (2013), then 10,123 (2014) and 9,960 (2015). This demonstrates a progressive adjustment of the local population and referral sources to the change of practice. If one assumes that the majority of those previously attending HES emergency services sought help from another source, then these figures suggest that 8,000 patients have been absorbed into acute primary eye care services in that locality, with community optometrists being the most likely port of call. There is no recognised College of Optometrists training/education course in acute ophthalmology at the moment.

PEARS / ACES / MECS

There is a variety of acronyms applied to the different enhanced community optometry acute services such as PEARS [47] **(Primary Eye-care Acute Referral Scheme / Primary Eye-care Assessment and Referral Service)**, ACES **(Acute Community Eye-care Services)** or MECS **(Minor Eye Conditions Service)** in the rest of the UK.

Of those consultants interviewed from England and Northern Ireland, 42% (16/38) reported having a local acute eye-care scheme mediated through community optometrists. 58% (22/38 did not). There was a range of **engagement and cooperation** in the schemes inception such as:

- **Collaboration** between Clinical Commissioning Groups (CCG), Local Optical Committee (LOC) and HES (*EEC 6, 13*)
- Weekly sessions of HES consultants dedicated to oversight of scheme and training (*EEC 6*) or active participation in regular **training by HES consultant lead** for the scheme (*EEC 36*)
- Including **GP with special interest** in ophthalmology (GPSI) (*EEC 9*)
- Emergency referrals being faxed to HES then triaged as appropriate to community optometrists or secondary care clinic (*EEC 13, 15*) or electronic referral schemes to improve **communication**
- Entirely independent schemes commissioned privately with no HES engagement or clinical governance role (*EEC 14, 15, 26*)

Successful schemes rely on:
• Engagement • Cooperation • Collaboration • Communication • Training • Clear protocols

Urgent need for rigorous evaluation of PEARS / ACES / MECS

Devolvement of acute care to optometrists is often promoted on the basis that it improves access to services. However, one published example from Leeds demonstrates that there is a strong tendency for optometrist practices (green diamonds) to be located outside of the areas of highest relative deprivation (lowest decile nationally super-output areas in pink) figure 10.[2]

As with elimination of the sight test fee in Scotland, encouraging access to services via optometrists by those of lower-socio economic status may be unsuccessful and in fact can have the unintended consequence of increasing uptake of services by a non-target audience of those less deprived.[48,49]
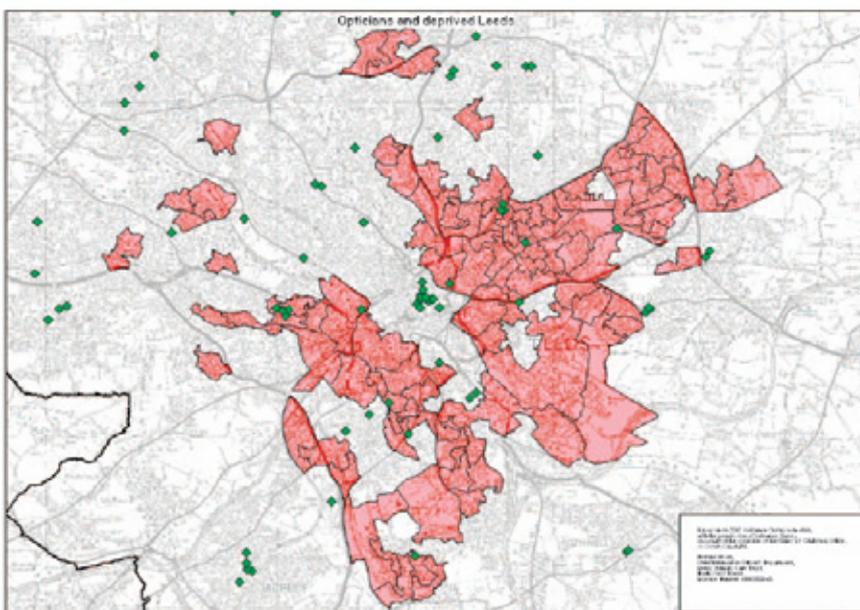

Figure 10: Map of Leeds showing mismatch of optometrist practices (green diamonds) and areas (red) of relative deprivation (lowest decile nationally)[2]

The danger inherent in improving access to publicly funded emergency eye attendances available through community optometrists is that this will awaken demand which is currently being met. Those who are currently seeing community pharmacists or self-managing (figure 7) with non-sight threatening conditions may migrate to the devolved community optometrist based system incurring cost with as yet undetermined clinical benefit. One consultant reported that their local CCG had initially set up the scheme for 4,000 annual attendances, and it has now grown to 9,000 annually without any evidence that it is reducing the attendances at HES (*EEC 48*).

local PEARS/MECS as the "best part" of their emergency services **vs** *"not impacted our numbers" (EEC 28); "totally pointless for patients"*

Two consultants cited their local PEARS / MECS as the "best part" of their emergency services (*EEC 6, 44*), but there were more consultants who had reservations. Although quantitative analysis had not been undertaken, from the 16 consultants with a local scheme asked what impact they felt the service had had on HES demand, there was notable scepticism; "*no impact*"(*EEC 38*); "*no impact so far*" (after 6 months) (*EEC 36*); "*I feel they are generating work that would otherwise not have been done*" (*EEC 34*); "*not impacted our numbers*" (*EEC 28*); "*totally pointless for patients*" (*EEC 20*). Others reported that red-eye or other similar schemes had been decommissioned (*EEC 30, 40, 47*) and two reported their local schemes to be struggling due to lack of interest from optometrists (*EEC 17, 35*). **This emphasises the need for engagement and training of community optometrists.**

Not all comments were negative however, and the sentiment was well expressed that "*it has to be better for our patients to see someone with a 4 year training, and many years' experience with the eye, who has a slit lamp and possibly an OCT, rather than seeing a GP practice nurse or someone in an A&E who may have only a few hours training in the eye*" (*EEC 44*).

A recently published evaluation of the impact of a MECS scheme on HES activity did show reduced GP referrals to HES resulting from the scheme's inception,[50] but a review of the literature regarding enhanced optometric schemes, including primary eye care services concluded that although it has been demonstrated that they may be clinically effective and appreciated by patients, there is no evidence that they are cost-effective.[51]

There is therefore a pressing need to evaluate the effects on health-seeking behaviour and the impact on ophthalmic presentations to general practice and secondary care (A&E and HES) of the inception of a community optometry based acute eye care scheme. This may be most possible in smaller localities in England or Northern Ireland where such schemes are currently being birthed, or on a grander scale in Scotland or Wales where national drivers are in play.

a pressing need to evaluate the effects on health-seeking behaviour and the impact on ophthalmic presentations

One consultant reported that they looked at their emergency attendances at the commencement of a PEARS scheme and then again at one year, and found no drop in numbers (EEC 28), but the PEARS may have halted the secular trend to increase emergency presentations so could still represent some benefit.

Demand Management: Triage

There is an aphorism in health care that we need to ensure that "*the right people with the right skills are in the right place at the right time*".[52] Triage in emergency care provision, be that in general practice, A&E or Emergency Eye Care (EEC) has the twin role of; a) diverting patients to an appropriate service (or away from services entirely), and b) determining the level of urgency of each case.

There is a growing evidence base around the use of specific ophthalmic emergency triage tools which can be administered by the patient,[53] computer[54] or health care professionals.[11,55-58] Tools can be imported

from other services, but the relevance of a specific triage tool will depend on the case mix presenting, and knowledge of local patient population should guide service design.[59,60]

Historic papers suggest that many "emergency" attendances to secondary eye care services were already low-risk prior to the post-2004 increase in A&E attendances, so the potential relevance of triage is not new and is expected to be more important as overall numbers grow, especially in open access walk-in services.[8,12,13,61-64] Diverting patients to an appropriate service helps to keep emergency services for cases with acute presentation or those for whom a delay in intervention risks a negative clinical outcome.

Can Emergency Eye Care patients be effectively triaged?

There is a blurred line between having a triage system, usually run by nursing staff, and having nurses acting as independent clinicians performing the triage role but also managing and discharging patients. From *The Way Forward* interviews with consultants responsible for Emergency Eye Care in their hospitals, what was clear was that those running walk-in eye services largely deployed ophthalmic nurses as frontline staff. Of such walk-in services where they had audited patient disposal, half (4/8 departments) reported that their **nursing colleagues dealt with 50% or more of the presenting patients without recourse to an ophthalmologist, however it was clear that training and maintaining sufficient numbers of nursing staff to run this service requires a significant investment of time and energy.** Where departments had a less developed ophthalmic nursing workforce this was reflected in the more limited capacity to deal independently with lower risk cases.

Should you have a triage mechanism for Emergency Eye referrals?

The greatest advantage of triage would be where the combination of large numbers of low-complexity patients and sufficiently experienced and confident ophthalmic nursing staff exists. This permits low-risk patients to be triaged as not requiring the attention of an ophthalmologist, hence preventing them ever entering the service. This triage can be done as faxed referrals or over the phone,[64] in person[65] or of electronic referrals (with or without images).[66]
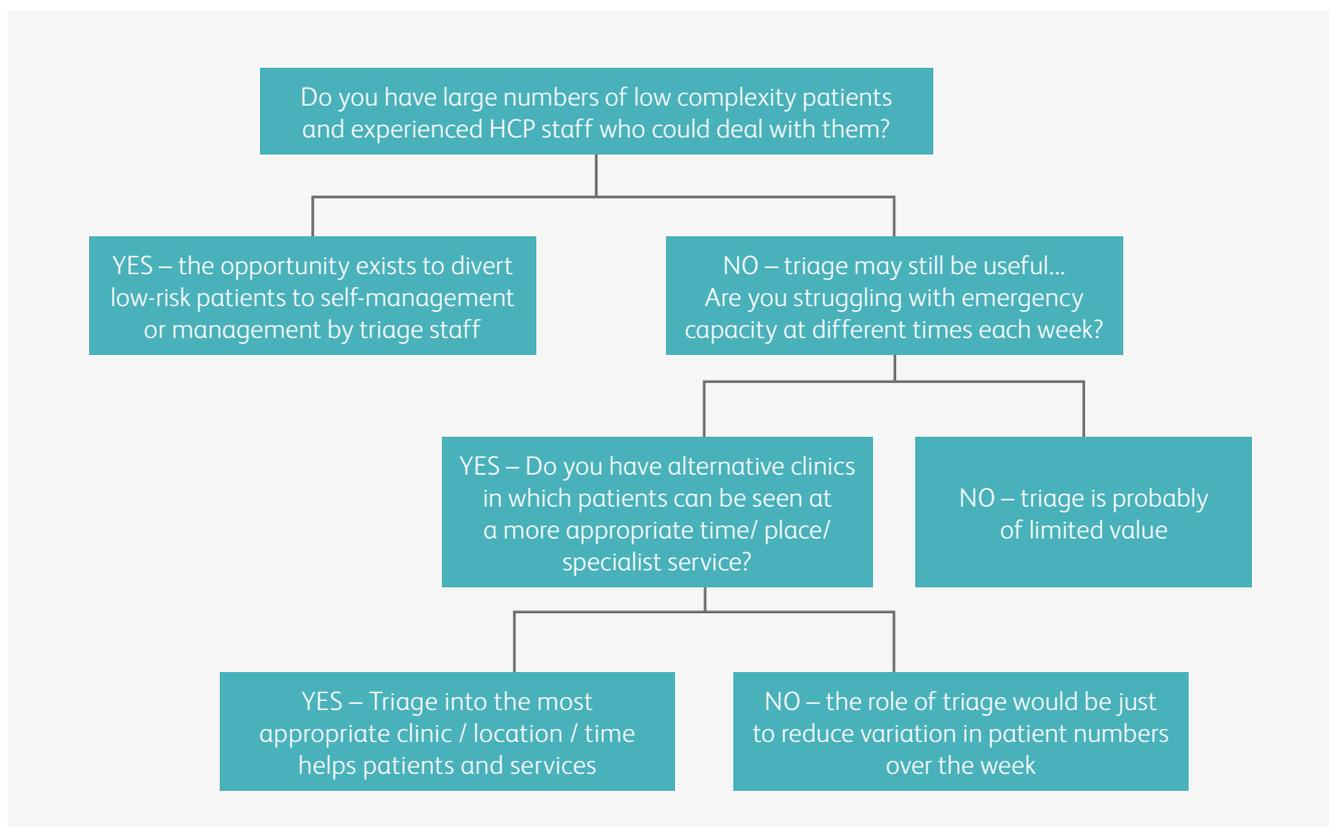

Figure 11: Decision making chart regarding the role of triage in a department

If a triage service is not seeking to deliver definitive management for any significant proportion of patients but merely to ensure patients are directed into the most appropriate service, then it must be acknowledged that this triage activity comes at a cost in its inception and delivery by diverting staff from alternative activities. It is necessary to identify a clear rationale for creating a triage system and detail the expected benefits (figure 11). Identifying the purpose of triage permits evaluation of whether the system you have created is fulfilling its intended purpose and is worth continuing with.

It might be argued that there is limited advantage to triage if a department currently has adequate capacity in the emergency service. A patient with three months of irritating/itchy eye symptoms referred to the Emergency Eye Care service could clearly be deferred to a less acute general or anterior segment clinic, however, if that conveys no overall benefit to your service or the patient then there would be little point in this triage. An exception to this would be under Payment by Results (PbR) in England. One consultant interviewed reported that their triage system diverted around one third of patients presenting to their walk-in Emergency service to appropriate clinics (*EEC 25*); if seen in the Emergency service a lower acute tariff is applied, whereas redirection to clinic then permits remuneration at a more appropriate level for the specialist input being provided. This is good for the finances of secondary care, but also for primary care as an unhelpful additional preliminary consultation is avoided.

If a department has very poor access to appropriate alternative clinics, triage has fewer advantages. For example a referral with a potential retinal vein occlusion can safely and usefully be diverted to a semi-acute Medical Retina (MR) clinic. If no such capacity exists, and the only choice is between a routine MR clinic and the emergency eye care service, triage conveys little advantage other than to permit allocation of the patient to a less busy session of the emergency service.

Controlling patient access: Walk-in or Acute Referral?

The different models of dealing with emergencies described by the 50 consultants with responsibility for their Emergency Eye Care service interviewed for The Way Forward are presented in figure 12. Different models suit different volumes of patient flow, which is primarily dictated by coverage population and accessibility (figure 13). The 11 units running walk-in services (excluding Moorfields whose coverage population is not possible to meaningfully estimate), on average served a population of over 780,000 people each, all but one serving half a million or more people. By contrast, the 33 departments offering an acute referral clinic service serve an average population of 500,000; the three departments "slotting patients into clinic" served an average of 350,000.

Slotting Acute Patients into Clinics 350,000	Acute Referral Clinics 500,000	Daytime Walk-In Service 760,000	24-Hour Walk in Emergency Eye Service 880,000

Figure 12: Emergency Service Configurations (with the mean population served)

Nine of the 50 consultants interviewed reported having qualitatively changed their service to cope with the increase in numbers. Two units moved from slotting emergencies into other clinics to running specific emergency clinics in order to control the "mayhem" (*EEC 36*). Seven departments had attempted to move away from the walk-in model to a booked acute referral service. The driver for this was to control demand – "*We stopped walk-ins due to too many patients with not much wrong with them – so we halved our numbers and out-of-hours is the only true emergency service now*" (*EEC 14*).

We stopped walk-ins due to too many patients with not much wrong with them - so we halved our numbers and out-of-hours is the only true emergency service now

The decision to change might be helped by evaluation of current service utilisation. One department had moved to an ARC after studying their walk-in service (to which >50% were self-initiated walk-ins) and finding only 9%

of patients were deemed truly in need of specialist eye casualty attention; of the sub-set that were optometrist referrals, 70% were felt to be entirely appropriate (*EEC 16*). The system was therefore redesigned to encourage patients to attend community optometrists as a first port of call who could then refer in as needed. To support the community optometrists and others in taking on this work, a 24-hour clinical decision support line staffed by ophthalmic nurses and ophthalmologists was established to provide advice. This redesign was prompted by evaluation of service utilisation; others have also found such evaluations useful in service design.[67]

Some cautionary tales regarding cessation of walk-in services were heard. Where referral sources and patients are strongly habituated in their use of a walk-in service, the change to a booked system was not always successful. (*EEC 23*). One consultant admitted having failed to adequately engage with main A&E, local optometrists and GPs when they closed their doors to walk-ins, so **communication is key to success** (*EEC 24*). Another consultant who had managed this change had needed to issue cards for patients with conditions such as uveitis or corneal graft patients who need to be assured immediate access to emergency care (*EEC 21*).

Some cautionary tales regarding cessation of walk-in services were heard

	Population served	Attendances per annum	Attendances / 1,000 pop. / year
Slotting patients into clinics (n=3)	350,000	3,000	9
Acute Referral Clinics (n=33)	500,000	7,000	14
Daytime Walk-in Service (n=9)	760,000	15,000	20
24-hour Walk-in Service (n=2)	880,000	40,000	45

Figure 13: Increasingly accessible services incite greater per capita attendances

Effects of service changes on surrounding units - Working with other units

Changing the accessibility of emergency services is likely to have an adverse effect on surrounding eye departments and this must be considered and new arrangements made with these and to inform patients of the new emergency provision. This is particularly a problem when departments reduce their out-of-hours on-call emergency service provision or even close their departments to emergencies at evenings or weekends, diverting patients to larger central units. In 2014 the RCOphth issued a communique detailing the risks to patient care and training of cessation of out of hours services in smaller units.[68] It is acknowledged that the EWTD and difficulties recruiting middle grade team members makes staffing on-call rotas problematic for smaller units.[1] A national survey of out of hours ophthalmic surgery provision found that **more than one in six units offered no out of hours services** or had no operating facilities,[69] and even larger units with a vitreo-retinal surgical service, 10% of these do not offer out of hours surgical provision.[70]

Consideration should be given to the impact on trainees' exposure to acute cases and the effect on the central units. Smaller units wishing to stop on-call services may therefore look to incorporate their trainees into the on-call rota of the central units.

Ophthalmic Services Guidance from the RCOphth regarding Emergency Eye Care also mandates that where local units are routinely relying on central eye departments to handle the out of hours work, which could include acute post-operative problems, **it is essential that reliable pathways are established for timely transfer of clinical information** to the central unit in the event of this being required urgently.[71]

Mapping of the Emergency Eye Care services in your area from all providers in community and HES may be a useful process.[1] This information can then be made available to the public via hospital websites and proactively advertised to referral sources (A&E/MIU/WIC, optometrists, GP) to encourage utilisation of the most local service; this can help over-reliance on central "hub" services.

Service design and the role of Health Care Professionals (HCPs)

Patients slotted into clinics	• Only more complex emergency patients • Low numbers but largely in need of ophthalmologist
Acute Referral Services	• Few lower complexity patients • Emergency eye care practitioners need to perform at a higher level than the referral source (GP, community optometrists, A&E)
Walk-in Services	• High volume of lower complexity patients • Large role for non-ophthalmologists

Figure 14: Access rules determine case complexity

Any department that is feeling stretched and is therefore wishing to limit demand on their emergency service may look to restricting access as a solution. Whilst the data in figure 13 suggest that this may effective, there are predictable changes in the patient population that are seen which can negatively affect departmental capacity if HCPs form a significant part of the workforce (figure 14).

For example, one department that changed from a daytime walk-in service to an ARC found that their nurse practitioners, who had previously filtered out 20-25% of walk-in patients so that they did not need to see the ophthalmologist were removing <10% after the change to ARC (*EEC 32*) as fewer lower-complexity cases were seen.

The increased complexity of the more heavily filtered patient population of an ARC creates a barrier to fully utilising HCPs. To train nurse practitioners to a level where they are more competent in diagnosis and management than community optometrists and GP takes a significant investment of time, and very careful selection of candidate staff. Whereas, with a walk-in patient population, useful roles can be taken up much more easily with less training being required. Hence published reports of walk-in Emergency Eye services often report high proportions of patients dealt with entirely by their nurse practitioners, such as 69% in one department seeing 25,000 walk-ins each year[72], 37% in another department seeing 27,000 patients annually[27] and ~20% in a third seeing just 8,000 patients.[65,73] There is evidence supporting the quality of clinical decision making by nurse practitioners and other HCPs in the emergency setting;[19,61,73-76] the fact that HCP can undoubtedly function as invaluable Emergency Eye Care team members is beyond debate, but does not guarantee that one will be able to recruit appropriate staff to replicate published success.

"We have more patients [in the ARC], but also more complex patients – we used to have dilution with less serious cases, but now they're more and more complex." (EEC 35)

65% The roles of HCPs varied from triage only to frontline staff filtering out low-risk cases, or just working alongside ophthalmologists as independent practitioners. Of the 48 consultants with whom Health Care Professional (HCP) roles were discussed, 65% (31/48) had HCPs in the Emergency Eye Care service. There were two departments with nurse consultants working with Emergencies, 15 with Nurse Practitioners, 4 with optometrists, one with a GP trainee and 9 with nurses who were largely in a triage role with little independent clinical management.

In some departments, specific roles for HCPs were reported as running;

- Telephone advice line for potential referring clinicians
- Triage with foreign body removal
- Anterior Segment or Uveitis clinics
- Patient education (such as for posterior vitreous detachment)

to minimise time taken up from the other clinicians.

More than one consultant named their experienced HCP team members as the "best part" of their Emergency service when asked at interview, but concern was raised about succession planning by some who were heavily dependent on their HCP colleagues (EEC 6, 44).

Developing the HCP workforce for Emergency Eye Care

Structures for training and accreditation of nurses, optometrists, orthoptists and other HCPs in the UK are solidifying for a range of roles within ophthalmic services. Organisations have emerged such as WOPEC, the Association of Health Professions in Ophthalmology (www.ahpo.net), and the RCOphth is in the process of formalising a Common Competency Framework for HCPs in ophthalmology in the UK. The opportunity for the Ophthalmology community to lead this process of expanded roles for HCPs, keeping high clinical standards and cost-effectiveness at the heart of the task-sharing, rather than seeing purely economic drivers inspiring change with commissioning bodies looking for what they perceive to be cheaper alternatives.

Units that run high volume walk-in services are therefore reliant on maintaining a strong nurse practitioner / HCP workforce. The predominant traditional model of informal on-the-job training of ophthalmic department nurses is insufficiently robust to develop this resource, and poaching experienced staff from other units has obvious negative consequences. **Courses that include education and training through clinical units working with Higher Education Institutes are needed to provide a natural need.**

An example of one unit's solution to workforce development specifically for Emergency Eye Care was coordination with the local University to take newly qualified nurses, train them on the shop floor to work in the Emergency Eye Service, and release them for one day a week study leave (coalesced into 5-day blocks) to undertake a one semester University course. This 15 week foundation module includes clinical competences; nurses thus trained, can work in the emergency service and run triage, and it forms a basis for some to progress on to degree level Nurse Practitioner certification and non-medical prescribing (EEC 33). Naturally agreed standards are vital for safe and sustainable workforce.

Is it possible to see more patients?

Senior ophthalmologists report remembering clinics when they, as juniors, regularly saw more than 20 patients in a session, be they diabetics, glaucoma patients or eye casualties. Whilst some element of recall bias might be suspect, ophthalmologists are undoubtedly spending more time with each patient than was historically the case. The spread of current practice as reported at interview is presented in figure 15 with the mode being 12 patients per session; analysis of factors determining faster throughput was not possible and seniority of staff is likely to be the most powerful determinant. One consultant shared analysis of how many patients each grade of doctor was able to see over 4 hours from a sample of 37 clinics in an ARC service (Figure 16 – senior grades also have spent time supervising and advising juniors, so the range can be taken as a conservative estimate) (*EEC 51*).
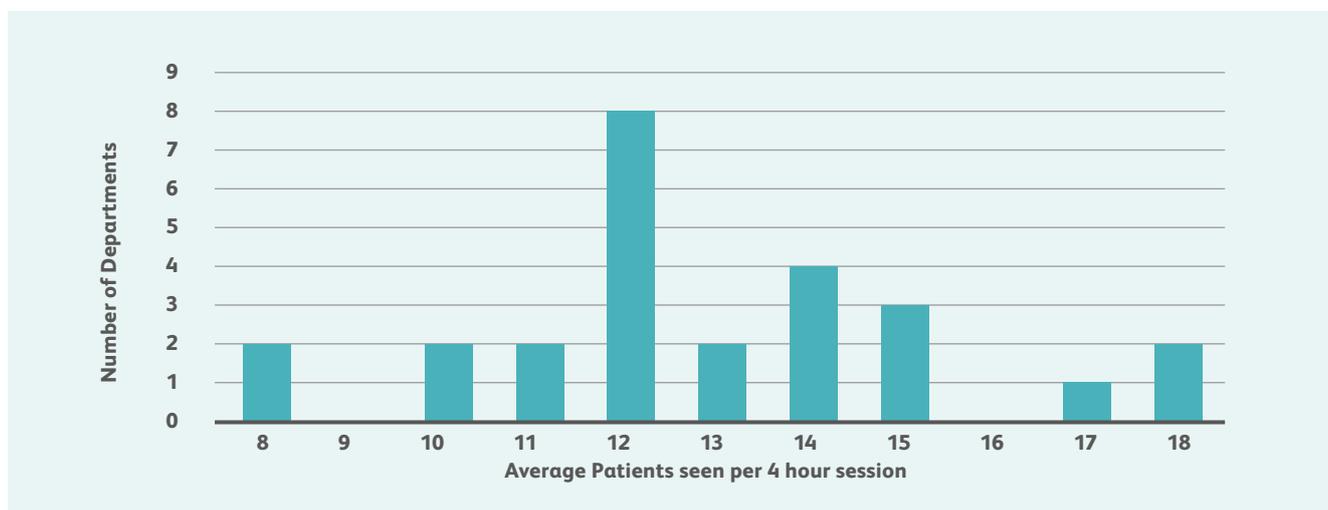

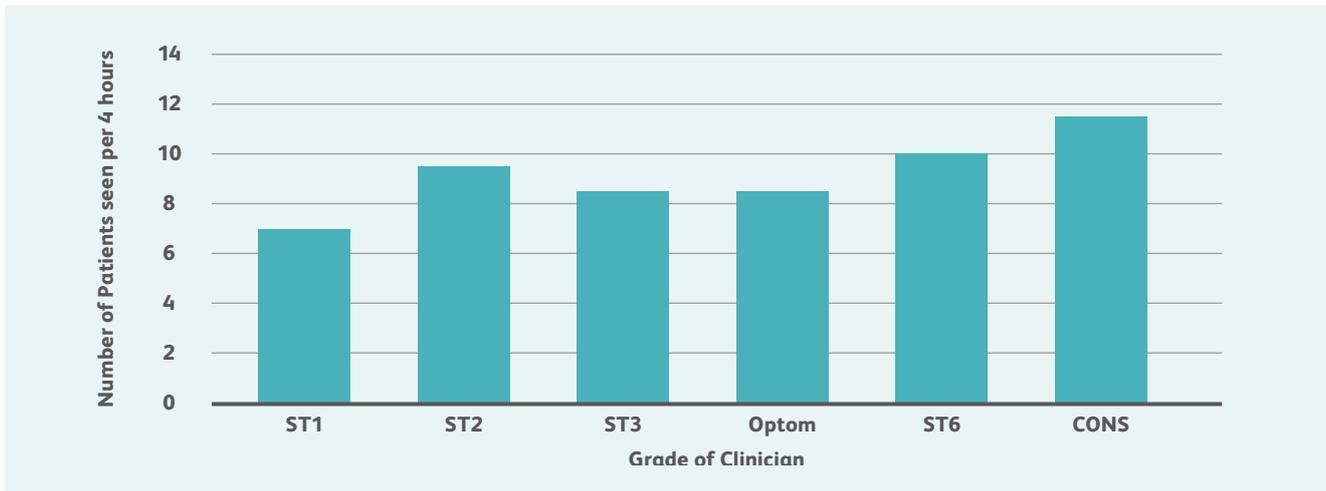Figure 15: Spread of practice in number of patients seen per 4 hour clinic

Figure 16: Number of patients seen per 4 hours by grade

Just as the general A&E junior doctors see fewer patients per hour than before[6], there are reasons why we may take longer to see patients now.

- "Kanski's Clinical Ophthalmology" has doubled in thickness between 1984 and 2015; there is now much more information to filter when making clinical decisions, more treatments available and more relevant investigations. When glaucoma care involved checking disc appearance, pressure and fields with a choice of three drugs or two operations, it was relatively easy for junior ophthalmologists to develop mental algorithms to guide decision making. Trainees now have to navigate a much greater complexity of decision making, involving the results of a growing number and intricacy of investigative modalities and a greater choice of treatments.

- There is an increased awareness of litigation, defensive practice and the need for comprehensive documentation that may be compounded for juniors who may have to navigate an unfamiliar Information Technology (IT) system for clinical records and investigations.

- The EWTD has reduced the hours junior doctors are able to work from Foundation Year training onwards, and reduces therefore their overall medical experience and the confidence that goes with this, although this should have been coupled with more intensive, structured training

- Juniors (and senior trainees / consultants) are now required to put more time into clinical assessments such as Direct Observation of Procedural Skills (DOPS).

None of these putative causes are easily remediable. Diagnostic algorithms or clinical guidelines may help speed up decision making for certain conditions, but no published or anecdotal evidence was uncovered to inform this discussion. Lessons might be learned from other developed health care economies however; the North American practice of employing a medical scribe to work with doctors is driven by acknowledgment of the relative expense of doctors time; if lower-banded MDT members can be utilised to perform roles such as completing documentation, or explaining diagnoses (such as posterior vitreous detachment) or treatment plans (such as lid hygiene procedures) this can optimise the use of the doctors time.

Increase consultant input to emergency services / How to reduce follow-ups

Eye casualty departments traditionally have been staffed by the least experienced ophthalmologists with minimal supervision, just as acute medical admissions or main A&E patients were initially diagnosed and managed by the least experienced staff in those respective departments.

A paradigm shift has been observed in this approach to acute care. It has been clearly shown that getting a senior opinion early is effective in improving efficiencies in main A&E departments (shorter

"Urgent Referral patient population is a complex case mix and many juniors find this very stressful; what doesn't work is junior doctors at the coal face who just can't handle it. You get very unhappy doctors and lots of inappropriate returns"

16

patients stays, less admissions), and in acute medical settings reduced adjusted case fatality rates and readmission rates.[77-80]

In ophthalmology, similar efficiencies produced by consultant involvement have been demonstrated. Consultant ophthalmologists are more likely to opt for longer outpatient follow-up intervals than other grades of ophthalmologist or HCP.[81]

The junior nature of eye casualty staff historically is well known to promote large numbers of early review appointments that may not be necessary, and the burden of follow ups for acute care was repeatedly mentioned at interview for this Way Forward project. One interviewee commented that the "*Urgent Referral patient population is a complex case mix and many juniors find this very stressful; what doesn't work is junior doctors at the coal face who just can't handle it. You get very unhappy doctors and lots of inappropriate returns*" (*EEC 9*).

The opportunity presents itself therefore to reduce demand by getting senior ophthalmologists involved early;

One consultant in a department seeing ~12,000 emergency attenders annually to an ARC service reported that they had seen a drop in the proportion of ARC patients that are follow-ups fell from 60% to 40% after one year of putting a consultant into the emergency eye clinic on 4 of the 10 weekly sessions (*EEC 51*).

Instead of permitting follow-up in the Emergency clinic itself, if subsequent appointments are all with a specialist Emergency consultant (*EEC 24*), the consultant on call (*EEC 15, 17*) or with consultants who have a concurrent clinic in that session (EEC 43), this can incentivise juniors to ask for advice rather than arrange spuriously necessary follow-ups which they may then be questioned about.

follow-ups fell from 60% to 40% after one year of putting a consultant into the emergency eye clinic on 4 of the 10 weekly sessions (EEC 51).

Follow-ups are often not a diagnostic dilemma and therefore are good for trained HCP delivered review clinics which were reported by some (*EEC 13, 22, 25, 26, 31, 51*).

Consultant engagement in eye casualty therefore has clinical benefits, but also managerial benefits (one department's clinical lead had taken on a session in their Emergency Eye Clinic for a period in order to fully understand the problems and bottlenecks to aid them in their managerial task) (*EEC 22*). Theoretical solutions, such as restricting follow-ups in eye casualty to one visit only, sound good but if after one review a further review is wanted and there is no space in any other clinic, patients may end up repeatedly being seen without any consultant input (*EEC 14*).

Of the consultants interviewed who were running specific emergency clinics, 39% (18/46) said there were no sessions of the week with a consultant working in the Emergency Eye service (they may be in a nearby clinic and able to offer advice if needed but are not primarily engaged with acute patients). Of the 28 departments with some direct consultant input, 6 had one session covered and one had a consultant on all 10 weekly sessions. Figure 17 shows the spread of practice regarding the number of weekly sessions reported as having consultants present.
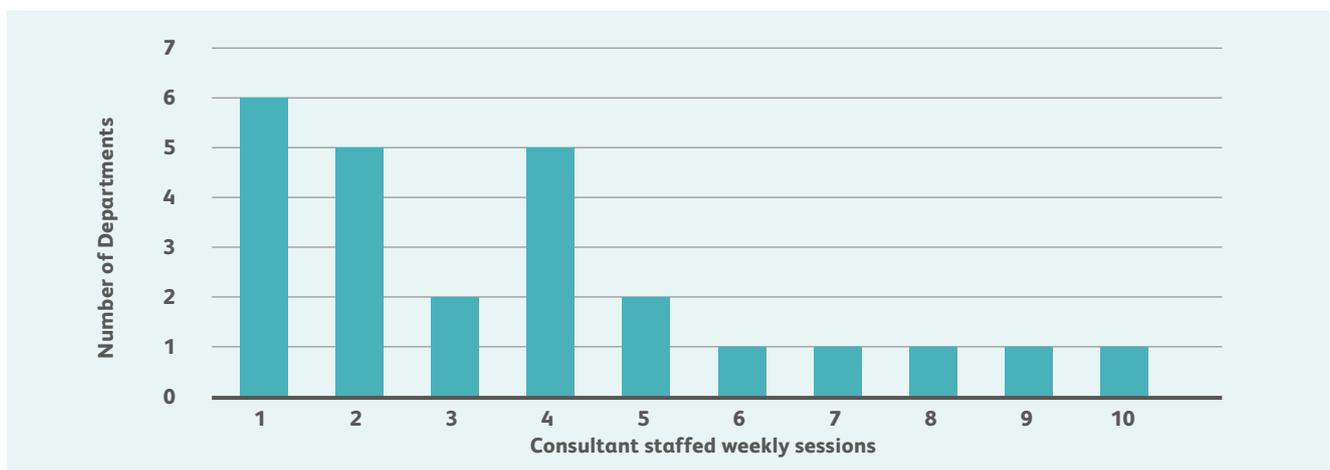

Figure 17: Number of departments with varying numbers of consultant staffed Emergency Eye Care clinics each week

Sixty one percent of departments have at least one session with a consultant, and, at interview, the means by which this engagement might be increased was discussed;

- Appoint a specific Emergency Eye Care consultant
- All newly appointed consultant ophthalmologists of any sub-specialty are given one session in the Emergency Eye Care clinic
- Existing consultants may take on a casualty session on a fortnightly or monthly basis
- Each week a different consultant might be assigned to cover the Emergency Service and their usual clinics are stood down for that week (this option was in operation in units where consultants do full weeks on call).
- Where there are very few consultant staffed sessions, in order to maximise the benefit of having a consultant run session, more junior and HCP staff can be rostered to that same session and as many emergency cases as possible coalesced along with acute follow ups so consultant input is as widely available as possible

It was commented by more than one consultant that colleagues who had been involved in just one sub-specialty, without general ophthalmic duties, found returning to working in eye casualty challenging. One consultant said their colleagues had been "stunned how hard it is" after they elected to assign the on-call consultant to two Emergency Eye Care sessions in the week of their on-call commitment, but that the challenge was largely positively received after the initial shock (*EEC 9*). Another department successfully migrated their entire consultant body (bar one) onto a system of seeing emergency patients during the day when they were on call. The negative impact on their sub-specialist follow-ups was offset by the benefit of having consultants effectively first on call and being given some time-off in lieu as compensation (*EEC 5*).

Discharge with telephone review / improved patient access to advice prevents follow up

Patients considered to have a good chance of improving with prescribed treatment may still receive a follow-up appointment if the attending ophthalmologist is concerned that, in the event of them deteriorating, the patient will experience difficulty re-entering the system once discharged. Emergency clinic staff can be encouraged to discharge with confidence (giving safety-net advice) by ensuring ease of access to review for appropriate patients, such as those with known recurrent conditions (uveitis, corneal grafts, herpetic keratitis), those recently operated on or those recently seen in clinic. This may be done efficiently by a trained ophthalmic nurse staffed phone line.

Certain conditions can be proactively followed up by phone. One consultant reported agreeing a tariff for phone reviews to facilitate a reduction in follow ups (*EEC 51*).

Electronic Patient Records (EPR)

Not only are the numbers of ophthalmologists of all grades not going to rise, anecdotally, the number of medical secretaries is also not increasing. The role of the secretary is also changing. At interview, of the 44 consultants with whom this was discussed, 16 (36%) were currently using an EPR, and 28 (64%) were not. EPR will doubtless become universally adopted in secondary care as they have been in primary care, so the requirement for filing and organising paper notes will vanish. New trainees have grown up in a world where medical school assignments are typed, not hand written, so the familiarity and speed with which we record information electronically, and the searchability and functionality that EPR bring will make them a compelling development step in eye health care delivery.[82]

From the interviews, a number of common themes were drawn which might usefully be considered to those involved in configuring their EPR. EPR should be;

- Accessible from all sites in the organisation and from PC in A&E and other locations patients may be seen acutely

- Searchable in order to facilitate audit
- Integrated with Trust software
- Able to automatically send letters to General Practice (and community optometrists when they are the referral source)
- Able to pull in images, fields, OCT to be a common portal for all relevant data
- Well designed for ophthalmology and fast enough to minimise reduction in throughput

Communication with community optometrists has historically been very poor.[83] Innovative pilots using existing or novel IT resources to improve communication between community optometrists and HES show great promise and the potential for enormous benefits for patients in reducing the number of attendances to secondary care required, and savings for the wider health care economy are clearly on offer.6[6,84]

Technology and Tele-ophthalmology

There are published examples of telemedicine working safely and effectively in research context[85] but also in real clinical practice for urgent cases to avoid long journeys by ambulance.[86] Telemedicine may be particularly pertinent to highly image dependant areas such as acute macular problems.[87] One glaucoma specialist consultant reviews new glaucoma referrals which are mostly received electronically from optometrists with disc photos and visual fields permitting excellent triage (GL 39).

The benefits of telemedicine are likely to be most evident in areas of low population density initially, but with the growth in video conferencing modalities, imaging capacity and connectivity, it seems hopeful that routine use of telemedicine as a means of saving the travel and expense of visiting acute secondary care services for lower risk patients and their relatives.[88]

Other aspects of technological advance may also contribute to service efficiency. The use of Short Message Service (SMS) text message reminders to patients stating the cost (to the NHS) of the appointment have been shown to improve attendance rates of booked clinics.[89] Did Not Attend (DNA) rates, which can be compared to national benchmarks.[90-93] represent a loss of capacity for booked emergency clinics just as they do for diabetic eye clinics[94] or children's eye clinics.[95]

Considerations for further action

Managerial

- Obtain data regarding the number of emergency eye service attendances each year for the past 3+ years. Try to break these down into new and follow up patients
- Arrange a meeting with your managers to discuss how the service is going to adjust if you experience the same increase that other units are seeing. Discuss actual numbers of patients seen by clinician per clinic (for instance 500 more patients annually means one more clinic per week seeing 10 patients) and prepare a staffing plan
- Switching to a paperless / paper-light system with the use of Electronic Patient Records can improve communication with referral sources by permitting automated email feedback. This also saves stationery, postage costs and administrative/secretarial time retrieving lost notes
- Map what Emergency Eye Care services exists in your surrounding areas from community or HES providers and disseminate this information to your primary referral sources (A&E/MIU/WIC, Optometrists, GP, community pharmacists) to ensure optimal utilisation of local services

Demand Reduction

- Consider whether you would like the referring GP or optometrist to have the chance to discuss the case with you, possibly averting referral. Set up a referral support and advice line for primary care colleagues to access advice.
- Disseminate guidelines for eye examination and management of common conditions to general A&E/MIU/WIC staff, and ensure they have the facility to perform visual acuity testing
- Arrange regular training sessions with general A&E, MIU or WIC staff, especially Nurse Practitioners in order to maximise their capacity to deal independently with eye problems
- Involve yourself with local GP continuing professional development teaching programmes and consider distribution of locally adapted red eye or visual problem algorithms
- Evaluate a sample of the patients coming to your Emergency Eye Care service. If sufficient numbers of low-complexity patients were identifiable as being low-risk prior to their arrival in your department (not just retrospectively known to have been low-risk) and could have been diverted to another provider, consider whether there might be an opportunity to start a community optometrist PEARS/MECS scheme to which such patients can be referred
- If a scheme (PEARS/MECS) is starting near you to divert acute eye presentations to community optometrists, work with those setting up the scheme to ensure evaluation is built into the design. Longitudinal data are needed on the impact of such schemes on eye-related attendances at GP, main A&E as well as at HES Emergency Eye Care clinics. The extent to which such schemes helpfully contribute to diverting the existing HES workload and how much they awaken hitherto unmet demand from the pool of currently self-managing conditions is not known. Growth in the evidence base in this area is urgently needed. Plan to share your findings

Optimising Capacity

- Triage of emergency referrals may be helpful for your service; evaluate what resources exist to triage referrals and what benefits you expect this triage service to convey. Evaluate with pre-determined benchmarks at prescribed time points whether the triage is delivering the improvements you were expecting
- Repeated or unnecessary follow-up appointments waste capacity. Early Senior Ophthalmologist input reduces follow-ups. Construct a departmental strategy to increase senior input into emergency cases at their first presentation, such as by appointing a consultant responsible for Emergency Eye Care or involving existing consultants in the service

- Clear access routes into each sub-speciality service can be created by the consultants leading those sub-specialties. Acute appointments for senior or specialist acute review should be established and protected with feedback to the referring doctor to discourage low-value use of this resource

- If your service is dependent on HCPs (such as Nurse Practitioners) then clear succession planning must be conducted years in advance of predicted retirement.

- If your service is not dependent on HCPs, then look to get HCPs engaged in the emergency service; identify staff members who can take on extended roles and look for opportunities for disease specific clinics (such as uveitis or anterior segment reviews). Evaluate their performance and set specific targets in terms of numbers of patients to be seen per session in order to prove cost effectiveness compared to ophthalmologists (calculate £/patient).

- Evaluate follow-up appointments generated from acute patients. These may be open to reduction by conducting telephone reviews or by improving routes for patients to re-access help (for instance with an acute enquiry phone number) so that clinicians can discharge with confidence.

Grow Emergency Eye Care as a sub-specialty

- Encourage appointment of a consultant with a specific remit for Emergency Eye Care
- Those already engaged with the emergency service should join the British Emergency Eye Care Society for peer learning and support.
- Juniors with an interest in Emergency Eye Care can be encouraged to pursue this as a career option arranging Trainee Selected Components (TSC) or Fellowships to progress this agenda

Appendix A

The Way Forward – Methodology

Introduction

The Way Forward project is an exciting opportunity to identify and disseminate current best practice models in the delivery of eye care in the UK. The substantial breadth of the work, including prevalence, projected trends in prevalence and absolute cases numbers over the next 20 years across the major ophthalmic diseases of public health significance (cataract, glaucoma, Diabetic retinopathy and AMD as well as Emergency Eye Care service provision) in all countries within the UK, necessitates a high level overview approach, but with specific detailed examples to illustrate themes, and provide impetus for positive change. Literature review will be combined with some primary data collection in the form of surveys of current practice to determine what innovations and service designs have been successfully employed already.

The Way Forward project is a shared learning opportunity, and to that end, a survey of UK departments was undertaken by phone interview employing a semi-structured interview template to guide interviews.

Literature Search

Literature search included both peer reviewed publications via search of Medline and a search of the grey literature. Exhaustive literature search such as that which would be undertaken for a systematic review, was not achievable nor appropriate within the terms of reference of this work, so a search strategy for each major condition was undertaken.

MeSH terms were less readily applicable for emergency care so "any field" key word search was used as follows: ("Eye" OR "ophthalm*")AND ("emergency" OR "casualty") AND ("UK" OR "Northern Ireland" OR "Scotland" OR "England" OR "Wales")

Using PubMed **(www.pubmed.org** accessed 22/11/2015), 282 citations were returned of which 73 were deemed relevant and full text retrieved.

Additional searches

To look outside of the peer reviewed literature available through PubMed, other relevant databases were searched.

The Cumulative Index of Nursing and Allied Health Literature (CINAHL), Health Management Information Consortium (HMIC) and Health Business Elite data bases were also searched with the strategy ("UK" OR "Northern Ireland" OR "Scotland" OR "England" OR "Wales") AND (ophth* OR eye) AND (service OR clinic OR design) which produced 83, 119 and 55 references respectively of which 47 references were taken up for review.

Particular key references in each subject area were entered into the Science Citation Index.

This search strategy was designed to have a higher specificity than sensitivity for relevant papers for efficiency. To mitigate the risk of missing important papers, for the older key papers identified from the search, future studies that cited those papers were then also viewed and for more recent papers, their references also inspected.

Prevalence Estimates and Case numbers for the UK up to 2035

With age as the most significant risk factor for the major conditions of interest, prevalence projections based on demographic trends were produced nationally using case definitions and age stratified data from

relevant populations. Other risk factors such as ethnicity and smoking are not static in the UK population, and although predictions regarding changes in these risk factors, stratified by age, across the country, applied to prevalence data derived from relevant populations might have been possible, more benefit was seen to lie in discussion of trends in these risk factors.

The interest we have in prevalence (for chronic problems such as glaucoma and diabetic retinopathy) or incidence (for treatable conditions such as symptomatic cataract), is primarily for predicting the demand on ophthalmic services. For Emergency Eye Care, incidence of eye injuries was not felt to be the major determinant of demand on services, and was also not felt to be readily amenable to being projected into the future to guide service capacity planning.

The numbers of Emergency Eye Care presentations, as discussed in the main report, are more likely to be driven by health seeking behaviour and service accessibility than by incidence hence it was felt to be of limited value to estimate the likely change in prevalence of urgent eye conditions over the next 20 years.[7]

Interviews with UK consultants leading Emergency Eye Care services to identify good practice examples

In the rapidly changing landscape of health service delivery in the UK, it must be recognised that not all good practice examples will have reached publication.

Using the RCOphth database of lead clinicians, emails were sent to every lead clinician in the UK asking them to nominate colleagues who might be prepared to be interviewed about the service configuration in their departments for Cataract, Glaucoma, AMD, DR and Emergency Eye Care. In some cases, one consultant was nominated to be interviewed for more than one sub-specialist area.

Nominated consultants were then contacted by email to arrange an interview time using a scheduling application, and the interview was then conducted using a semi-structured interview template, with data recording done into a spreadsheet for later thematic evaluation. Examples of poor practice or instances where departments are experiencing difficulty in realising the quality and quantity of service that they would have liked to deliver were seen as being as informative as the examples of good practice.

Project Output

It was initially intended that one single "Way Forward" project written report would be released, however with the volume of data gathered from interview and literature search, it was felt that it might be difficult to keep the document acceptably concise without limiting the opportunity to present different models of practice. It was therefore concluded that separate reports should be prepared for each subject area. These reports were prepared by the principal investigator, reviewed by members of the Leeds Ophthalmic Public Health Team and The Way Forward project Board along with reference consultants. After revision, a pre-final draft is then to be circulated to all consultants who had participated in The Way Forward project interviews for final input prior to RCOphth ratification and dissemination.

Dissemination through national congresses and regional educational meetings is intended. The success of the project can be seen to pivot around whether any change in local practice is facilitated by the output, either by reports or by presentations.

Appendix B

We, as clinical leaders need to understand the interaction between demand and capacity if we are to be able to provide for a future in which demand grows by 25% every ten years up to 2035. The outline of a capacity / demand model below should permit you to map where your service is currently, and also empower future planning on the basis of expected increases.

In reading this, ask yourself;

- Where is our department sitting on the demand/capacity graph for the various sub-specialty services we provide?
- Are there obvious inefficiencies that are reducing our effective capacity?
- What was the last thing we did to put up our capacity? (eg new staff member or waiting list initiatives)
- What steps will we take in the short term to ensure being under capacity does not lead to delays that put patients at risk (eg overbook clinics, run waiting list initiatives)?
- What is our next step to increase permanent capacity? What will be the trigger point that makes us act to increase capacity?

Appendix C

In business, capacity dropping below demand means losing customers, so increments in capacity are generated when the crisis point (★) of demand equalling capacity is reached figure B1. In publicly funded health care, the managerial drives are more strongly orientated towards avoidance of creating unused capacity (figure B2). The trigger point (★) for creation of more capacity is less well defined, but is likely to be driven by the growth of the backlog, represented by the shaded area under the demand curve. The incremented capacity will, in order to avoid excess capacity, aim to create a capacity/demand equilibrium hence building to match the current demand, but without allowance for expected future demand growth. One consultant interviewed for The Way Forward project described this dynamic; *"we don't plan for growth, but just for what is currently required. We know a wave of patients is going to hit us, but nothing is done until there is a large backlog, adverse outcomes, patient complaints – and only then, is there enough of a driver for the managers to expand capacity – but as the service grows – the cycle repeats itself. Proactive planning is needed rather than just responding to serious untoward incidents (SUI)."*(AMD27)

Whilst this behaviour in health management would be contrary to good business, it is rooted in the need to minimise costs. The ideal of balancing capacity and demand intrinsically requires excess capacity, as there will be fluctuation in both demand (patient flow) and capacity (staff sickness / leave). Every time there is an excess of demand, the surgical waiting list or clinic backlog is added to. When there is an excess of capacity (eg patients failing to attend appointments), it is harder to benefit from this unplanned excess capacity. Hence, even where capacity matches demand in theory, some capacity is wasted due to short term variation, and waiting list initiatives and backlog clinics are often needed to maintain the status quo.[100]

So in figure B3, the mean capacity might equal the mean demand, but a backlog will still develop. NHS management experience tells us that it is the capacity side that brings more variation to the equation, as staffing and equipment issues cause large unexpected drops in capacity that are not easily remedied in the immediate timeframe needed to avoid loss of activity.[100]
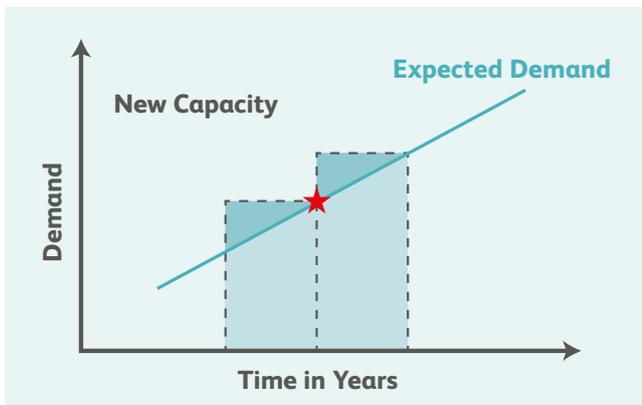

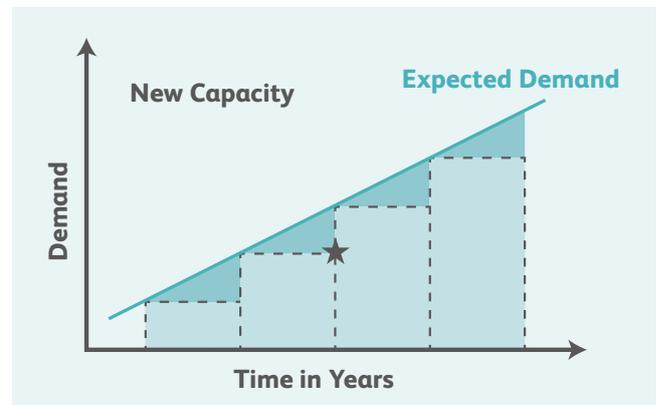Figure B1: Capacity is incremented in advance of the expected growth in demand

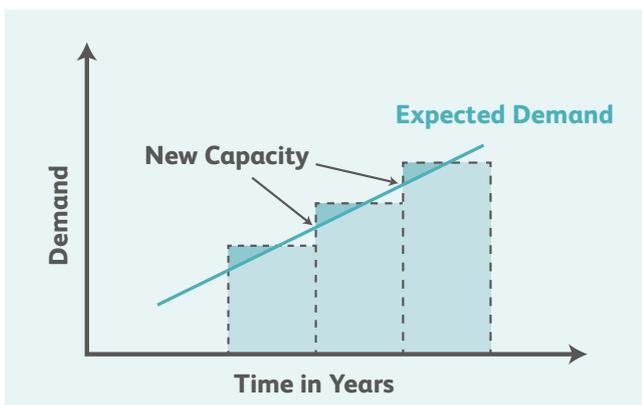Figure B2: Capacity increments lag behind expected growth in demand

Figure B3. Mean capacity and demand equilibration

Demand management and potential capacity maximisation

As we consider our own situations, which may well be different for each sub-speciality service offered, we can place ourselves on a graph of perceived demand plotted against the capacity we intend to provide.

Hence a unit may have a cataract service (●) that is almost coping but requires occasional weekend "initiative" lists in order to avoid breaching the Referral to Treatment Time (RTT) target. The newly built injection facilities and recently trained nurse injectors may, by contrast have moved the previously failing macular service (▲) into a healthy position to cope with current demand and the expected future rise (figure B4).

When placing our services on this graph, it is important to recognise that the equilibrium line is not fixed, and that factors from either side can shift this (figure B5). Before employing more staff and building more rooms, good management will want to examine potential for reducing inefficiencies and managing the demand side such that the same intended capacity meets a greater amount of perceived demand.[101] If a department has been traditionally performing six cataract operations under local anaesthetic (LA) per four hour operating list, but by improving turnaround time between cases increases this to 8 cases per four hour list, this increase in capacity of 33% permits the department to stay on top of the predicted growth in demand for cataract surgery for at least the next 10 years.
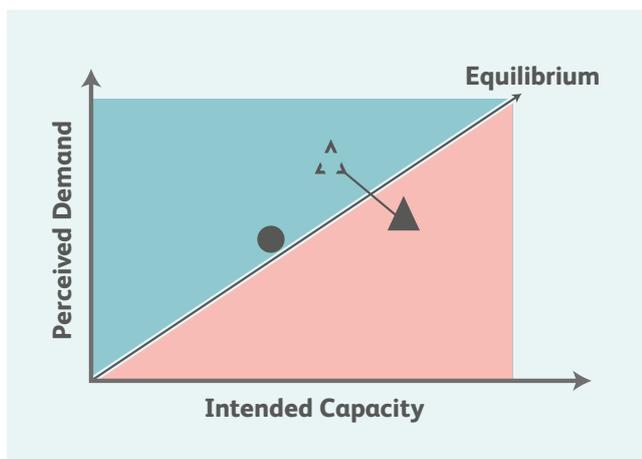

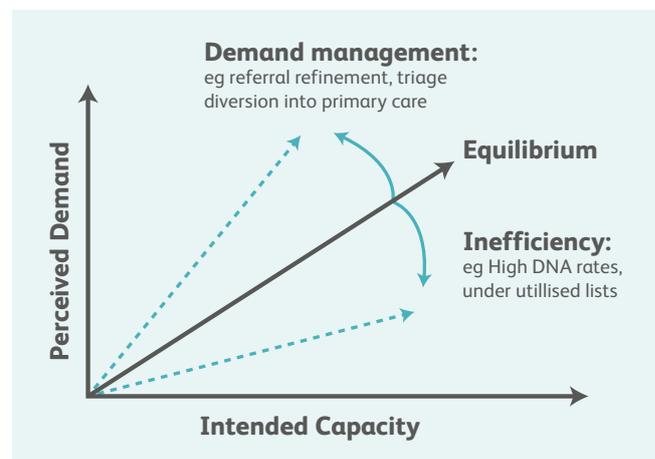**Figure B4: Individual services can be mapped to their current positiont**

Figure B5: The equilibrium can be shifted to optimise current capacity

You will usually be under-capacity: how are you going to deal with it?

In any well managed eye department, if there were more capacity than demand, staff would be re-assigned to other tasks to prevent wastage. This appropriate intolerance for being over-capacity, and inevitable short term variation (sickness, DNA, equipment failure) that waste intended capacity, combine to produce the inevitable trend toward every eye department feeling stretched. If we accept this assessment, it is reasonable for departments to decide how they are going to deal with that (e.g. waiting lists initiatives, locums) and to cost that into their services. This proactive approach to being under-capacity should contribute to the protection of patients. The point at which it is decided to put on new permanent capacity (★ figure B2) would be determined by the time when the cost of permanent new capacity (e.g. new ophthalmologist or AHP team member) becomes less than the cost of the temporary capacity expansion plan, which would be typically more expensive per patient episode.

Reflection on the Capacity / Demand Model

Answering the questions posed allows us to see where our different speciality services sit at this moment in time, to see how we have approached the need for increased capacity in the past, and therefore to plan our future response.

- Where is our department sitting on the demand/capacity graph for the various sub-specialty services we provide?
- Are there obvious inefficiencies that are reducing our effective capacity?
- What was the last thing we did to put up our capacity? (e.g. new staff member or waiting list initiatives)
- What steps will we take in the short term to ensure being under capacity does not lead to delays that put patients at risk?
- What is our next step to increase permanent capacity? What will be the trigger point that makes us act to increase capacity?

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