PRIMARY CARE
Eye Services Review Group
REPORT

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

CONTENTS

The appendices to this report are listed in a separate document, Primary Care: Eye Services Review Group Report Appendices and it is available to download at **www.hse.ie/eng/services/publications**

FOREWORD

It has been a privilege and honour to Chair this Primary Care Eye Services Review and to have worked with the committed and dedicated Review Group Members who worked as a team to complete the report. Special credit is due to Aisling Heffernan, Programme Manager, for her particular diligence, professionalism and passion which she brought to the work.

The PCESRG members wish to acknowledge the very sad passing of Mr. Peter Barry, RIP, Clinical Lead for the National Clinical Programme for Eye Care, and to extend our deepest sympathy to his family and friends. Peter made a very significant contribution to the working of the group and his valuable input was critical to finalising key aspects of the report. The report will stand as part of his legacy to Irish eye care services.

Eye services in Ireland are, like many other health services, structured on a hospital-centric model with under-developed primary care eye services. It is critical for current and future patients that we act to shift much of the existing eye care to primary care settings to create capacity in our hospitals for more complex and hospital appropriate work. The work of the Primary Care Eye Services Review Group has unearthed many excellent examples of good practice that need to be replicated nationally. It has also revealed service shortcomings that require attention in order to have high quality, safe, integrated services that patients can access in a timely way and be proud of. It is also important that eye-care professionals have confidence in the services they provide and the structures within which the services are supported and managed.

Our approach to the drafting of the report was heavily focused on listening to the experiences and suggestions of a wide variety of stakeholders. We trust that these valuable contributions are adequately reflected in the report. While the report documents the existing services and sets out a vision for the future organisation of primary care eye services, the detailed future blueprint and accompanying care pathways are the main deliverables within the report. Some of the actions have already been implemented with others underway but the scale of change required to enable the shift in care will, inevitably, need substantial investment.

We look forward to assisting with the report's implementation and to witnessing the patient and wider health system benefits.

Brian Murphy
Chairman
Head of Planning, Performance & Programme Management
Primary Care Division

ACKNOWLEDGEMENTS

A very sincere thank you to all of the following:

- To the parents and users who contributed to the eye services survey. The input from the eye services survey has helped to keep the patient/user very much at the centre of our deliberations and considerations and has hugely enriched this report and its recommendations.

- To HSE management who supported the report process, through commitment of their staff with the appropriate expertise to the project work; our thanks for this and for enabling an integrated approach to this work.

- To the advocate representative on the group, Ms Mandy Daly, for her time and commitment in striving to ensure that the patient/user's voice was heard at all times.

- To the Department of Health, external agencies/organisations/professional groups and individual professionals for giving of their time and expertise.

- To our HSE colleagues in the Office of Planning, Performance and Programme Management, Primary Care Division Office for their work and support of the project.

- The PCESRG wishes to acknowledge the hard work and dedication of all the staff currently working within eye care services in Ireland and the work of the National Clinical Programme for Eye Care in determining a new model of care for the provision of eye services.

- To all who directly or indirectly contributed to the work of the Primary Care Eye Services Review Group.

Your work and contribution has served to make this report an appropriate roadmap for the future of primary care eye services in this country.

PCESRG Members
April 2017

MEMBERSHIP OF THE PRIMARY CARE EYE SERVICES REVIEW GROUP (PCESRG)

Membership of the PCESRG was agreed in August 2014 as follows:

- Mr Brian Murphy, Head of Planning, Performance & Programme Management, Primary Care Division (Chair)
- Ms Aisling Heffernan, National Programme Manager, Office of Head of Planning, Performance & Programme Management, Primary Care Division (Secretary)
- Mr Paul Moriarty, Clinical Lead for the National Clinical Programme for Eye Care (Member of the PCESRG from August 2014 to August 2015)
- Mr Peter Barry (RIP), Clinical Lead for the National Clinical Programme for Eye Care (Member of the PCESRG from September 2015 to May 2016)
- Mr William Power, Clinical Lead for the National Clinical Programme for Eye Care (Member of the PCESRG from July 2016 to Present)
- Dr Alison Blake, Community Ophthalmic Physician, CHO 1, Cavan/Monaghan
- Ms Carmel Burke, Head of Operations, Primary Care Reimbursement Service
- Ms Mandy Daly, Director of Advocacy and Policy Making, Irish Neonatal Health Alliance
- Ms Shirley Keane, Business Planning and Development Manager, Office of Head of Planning, Performance & Programme Management, Primary Care Division
- Ms Siobhan Kelly, Programme Manager for the National Clinical Programme for Eye Care
- Ms Marion Kennedy, Community Care Manager, CHO 3, Mid West
- Ms Kathleen Malee, Director of Public Health Nursing, CHO 2, (Galway)
- Mr Tony McAleer, Clinical Specialist Orthoptist, Royal Victoria Eye & Ear Hospital, Dublin
- Ms Bernadette McDonnell, Assistant Principal Officer, Primary Care Division, Department of Health
- Dr. Áine McNamara, Consultant in Public Health Medicine, Department of Public Health, Health and Wellbeing, Merlin Park, Galway
- Dr Loretta Nolan, Community Ophthalmic Physician, Midlands Regional Hospital, Portlaoise
- Mr Pat O'Dowd, Assistant National Director, National Contracts Office, Primary Care Division
- Ms Gillian O'Mullane, Head Orthoptist, Children's University Hospital, Temple Street, Dublin and Chair of the Irish Association of Orthoptists (IAO)
- Dr Brian Redahan, Principal Medical Officer, CHO 7, Dublin South West/Kildare

List of Abbreviations

AMD	Age-Related Macular Degeneration
AMO	Area Medical Officer
AOI	Association of Optometrists Ireland
BHfC	Best Health for Children
CEO	Chief Executive Officer
CHO	Community Healthcare Organisation
CNA	Cannot Attend
CORU	Health and Social Care Professionals Council
COSMTS	Community Ophthalmic Services Medical Treatment Scheme (Pilot)
COSS	Community Ophthalmic Services Scheme
CP	Care Pathway
CSO	Central Statistics Office
CUH	Cork University Hospital
DES	Department of Education and Skills
DIT	Dublin Institute of Technology
DNA	Did Not Attend
DoH	Department of Health
DPHN	Director of Public Health Nursing
DSP	Department of Social Protection
ED	Emergency Department
EPR	Electronic Patient Record
FB	Fighting Blindness
FODO	Federation of Ophthalmic and Dispensing Opticians
GAT	Goldmann Applanation Tonometry
GMS	General Medical Services
GP	General Practitioner
HIPE	Hospital Inpatient Enquiry
HIQA	Health Information and Quality Authority
HR	Human Resources
HSE	Health Service Executive
IADO	Irish Association of Dispensing Opticians
IAO	Irish Association of Orthoptists
IAPB	International Agency for the Prevention of Blindness
ICGP	Irish College of General Practitioners
ICO	Irish College of Ophthalmologists
ICT	Information and Communications Technology
IEC	Integrated Eye Clinic
IGDB	Irish Guide Dogs for the Blind
IHCA	Irish Hospital Consultants Association
IMO	Irish Medical Organisation
ISA	Integrated Service Area
KPI	Key Performance Indicator
LHO	Local Health Office
MDT	Multidisciplinary Team
NCBI	National Council for the Blind Ireland
NCHD	Non-Consultant Hospital Doctor
NCSE	National Council for Special Education
NEI	National Eye Institute (US) between NCSE and NMBI

NMBI	Nursing and Midwifery Board of Ireland
NSC	National Screening Committee (UK)
NSS	National Screening Service
OLCHC	Our Lady's Children's Hospital, Crumlin
OPD	Outpatient Department
PAYE	Pay As You Earn
PCESRG	Primary Care Eye Services Review Group
PCET	Primary Care Eye Team
PCRS	Primary Care Reimbursement Service
PHN	Public Health Nurse
PMS	Patient Management System
PRSI	Pay-Related Social Insurance
RCOphth	Royal College of Ophthalmologist (UK)
RGN	Registered General Nurse
ROP	Retinopathy of Prematurity
RT	Retinitis Pigmentosa
RVEEH	Royal Victoria Eye and Ear Hospital
SPHN	School Public Health Nurse
SVS	School Vision Screening
TSCUH	Temple Street Children's University Hospital
VTVI	Visiting Teacher for Visual Impairment
WHO	World Health Organisation
WTE	Whole-Time Equivalent

OUTLINE OF THE ROLES OF EYE CARE PROFESSIONALS

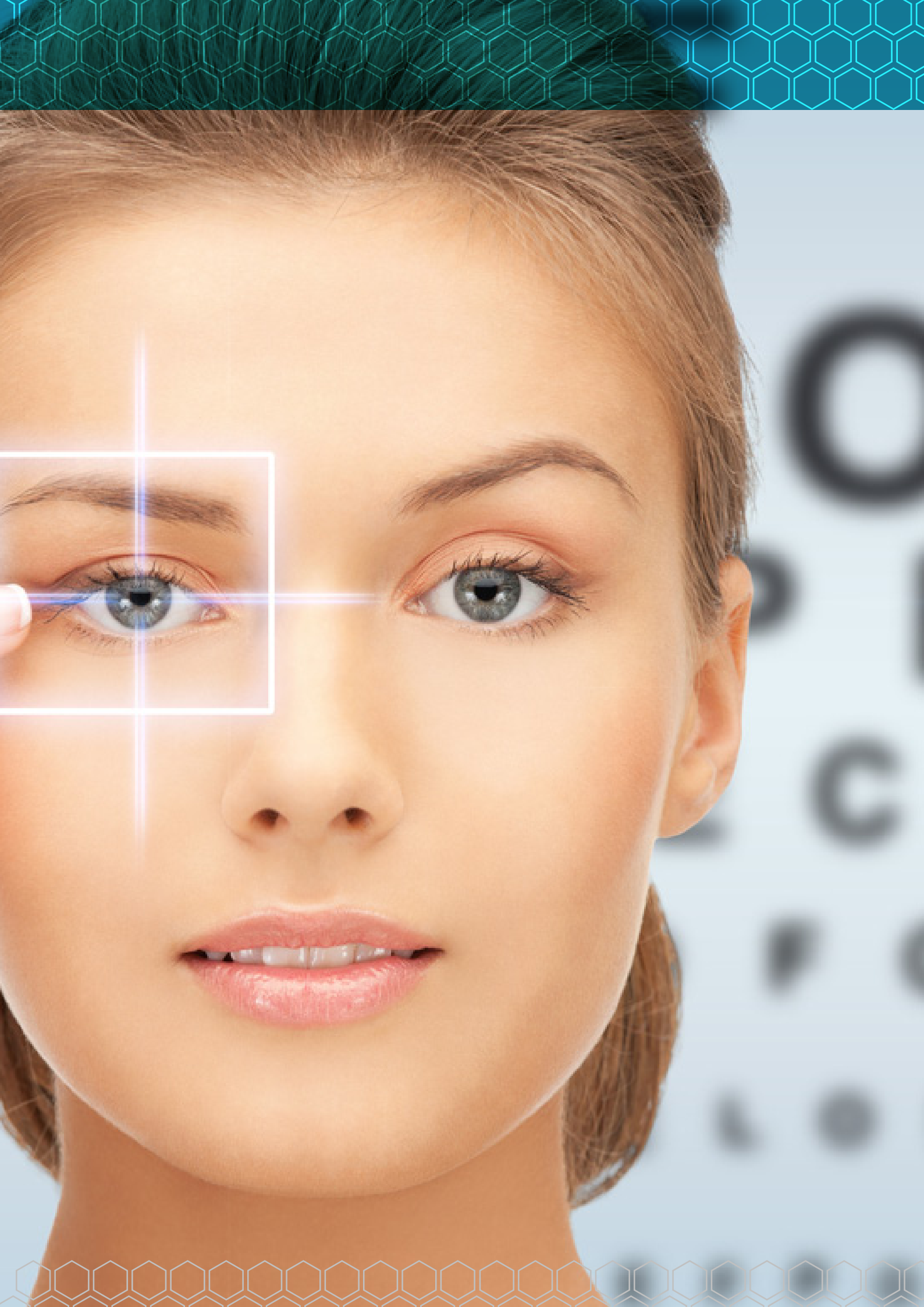
An **ophthalmologist** is a medical doctor who has undertaken additional specialist training in the diagnosis and management of disorders of the eye and visual system. Ophthalmologists can prescribe medication and perform surgical procedures in the management of eye disease.

An **optometrist** is a practitioner who examines eyes gives advice on visual problems and prescribes and fits glasses or contact lenses. If eye disease is detected an optometrist will generally refer patients to an ophthalmologist for further management.

An **orthoptist** may also prescribe management programmes for those with conditions such as refractive error (need for glasses), double vision, neurological disorders and ocular motility disorders, as well as aiding in the rehabilitation of impaired vision.

An **ophthalmic nurse** cares for patients who are diagnosed with disorders of the eyes. Ophthalmic nurses prepare patients who have to undergo eye procedures/tests and provide education to patients on the procedure/test itself as well as aftercare or follow-up. Ophthalmic nurses assist ophthalmologists during procedures.

An **ophthalmic technician** is a person who supports an eye care team in providing eye care for patients. Responsibilities include carrying outpatient examinations, such as measuring a patient's vision, maintaining equipment, and clarifying information for patients.



1.0 EXECUTIVE SUMMARY

1.1 Background

Eye care in Ireland encompasses a range of clinical, technical and rehabilitative services that include:

- Vision surveillance and screening at birth, preschool and primary school.
- Assessment, diagnosis and treatment of visual impairment and other ocular pathologies in adults and children.
- Provision of glasses for correction of vision.
- Provision of therapy such as patching to correct amblyopia.
- Provision of surgery and injections to correct sight-threatening conditions and other ocular pathologies.
- Provision of low vision aids to maximise independence.

Mr John Hennessy, the National Director for Primary Care in the Health Service Executive (HSE), commissioned a review of primary care eye services and the first meeting of the Primary Care Eye Services Review Group (PCESRG) was held in August 2014. The group, chaired by Mr. Brian Murphy, Head of Planning, Performance & Programme Management, Primary Care, and a number of subgroups, with individual chairs, met regularly until April 2016. The following were the agreed terms of reference:

- ***Examine and document the primary care eye services currently provided to children and adults nationwide, including HSE directly provided services and contracted primary care services.***
- ***Determine and document the needs of the population for primary care eye services.***
- ***Review the current primary care eye services in terms of quality, safety and consistency, and identify issues for action.***
- ***Set out a clear blueprint with recommendations for the delivery of primary care eye services which will ensure a high-quality, safe and consistent service for patients.***
- ***Put in place an action plan to address immediate primary care paediatric eye services issues in the Dublin area.***

A multimethod consultation process was held in December 2014 with stakeholders, where valuable feedback was sought from staff and service users that informed the work of the PCESRG. The PCESRG also reviewed international best evidence and examples of primary care eye services in other countries, such as the UK, USA, Australia and New Zealand.

1.2 Population Needs for Eye Services in Ireland

It is estimated that there are currently 225,000 people with low vision and sight loss in Ireland. This is projected to increase to 272,000 by 2020. Within that figure there are approximately 13,000 blind people living in Ireland today; this number is expected to increase to 18,000 by 2020.[1] A significant proportion of the older population in Ireland experience sight loss which is largely preventable.[2] Blindness and visual impairment can significantly reduce quality of life by affecting physical, functional, emotional and social wellbeing. All of this translates into a significant economic impact on individuals, families, society and the State.

1.2.1 Eye Disorders in Children

A child's vision continues to develop up to 8 years of age, approximately. Early identification and intervention to treat a visual disorder maximises the long-term sight a child will have. Vision surveillance and screening are efficient and cost-effective methods to identify children with visual impairment or eye conditions that are likely to lead to visual impairment so that a referral can be made to an appropriate eye care professional for further evaluation and treatment.

Vision screening in Ireland is carried out under the guidance of Best Health for Children Revisited, (BHfC)[3], the national screening and surveillance programme of the HSE. Screening checks are conducted to assess visual acuity, to identify medical conditions that may impact on eye health and to detect the presence of visual defects such as amblyopia, strabismus and refractive error.

1.2.2 Eye Disorders in Adults

With Ireland's expanding ageing population the impact of sight loss or vision impairment will become more evident. Several international studies have demonstrated the effects of population growth on the current level of care needed, and it is likely to continue to lead to a significant increase in the demand for eye care[1] and the direct costs of eye care.[2] Adults may experience visual impairments due to a variety of issues including refractive error, age related macular degeneration, glaucoma, cataract or diabetic retinopathy.

1.3 The Adequacy of Existing Services

At present, the increasing patient numbers and growing incidence of chronic diseases are placing an enormous strain on the current model of eye care. Hospital eye departments are overstretched by patients with chronic diseases, many of whom could be appropriately diagnosed, treated and managed in integrated eye clinics in the community. Community and hospital services are overloaded with high numbers of referrals for children, many of whom have nothing abnormal detected on examination, thus delaying access to the service for adults and children who more urgently require attention/care. The review by the PCESRG identified some reasons why eye care services are currently overloaded, which are as follows:

- Existing capacity is inadequate to deal with the demands on the service.
- Inadequate levels of training and varied implementation of protocols from surveillance and screening programmes.
- Inconsistent policies regarding the provision of glasses and low vision aids and appliances.
- Inadequately resourced primary care-based clinics both from a staffing and equipment perspective.
- Some community ophthalmic physicians working in isolation without access to orthoptists, nurses and/or optometrists.
- Limited role for optometrists within publicly provided services.
- No Information and Communications Technology (ICT) system in place to facilitate communication between community and acute ophthalmology services and to best manage patient care.

The lack of well-developed and integrated ophthalmic services may result in (a) children developing a long-term visual impairment that could have been resolved at an early stage which could impact on their educational and lifelong development; and (b) adults suffering visual impairment from conditions which are preventable and treatable.

1.4 Blueprint for the Future Provision of Primary Care Eye Services

The Review Group's vision for primary care eye care services delivered by the HSE in Ireland is of a high quality, safe, effective and efficient service, meeting and responding to the changing needs of those of all ages, with actual or suspected ocular pathology with their vision. The service should be accessible without undue or unnecessary delay, and as far as possible be geographically convenient. It should offer clear and accurate information on which patients (or carers) can exercise their rights to make informed choices and it should result in a high level of patient (or carer) satisfaction. The service should be staffed by a well-trained, dedicated, caring and competent workforce with good governance and accountability, providing clinical leadership at both national and community levels and committed to an evidence-based and evaluative service. The team should work efficiently and in collaboration with closely allied disciplines as a multidisciplinary primary care team, working as one with hospital colleagues.

2.0 INTRODUCTION AND METHOD

2.1 Overview of the Primary Care Eye Services Review

In July 2014, Mr John Hennessy, the National Director for Primary Care, requested that a review of primary care eye services be conducted. The first meeting of the (PCESRG) was held in August 2014, chaired by Mr. Brian Murphy, Head of Planning, Performance & Programme Management, Primary Care. The plenary group and a number of subgroups, with individual chairs, met regularly until April 2016. Extensive work was also completed via email and teleconference.

2.2 Terms of Reference

The following were the agreed terms of reference:

- **Examine and document the primary care eye services currently provided to children and adults nationwide including HSE directly provided services and contracted primary care services.**
- **Determine and document the needs of the population for primary care eye services.**
- **Review the current primary care eye services in terms of quality, safety and consistency, and identify issues for action.**
- **Set out a clear blueprint with recommendations for the timely delivery of primary care eye services which will ensure a high-quality, safe and consistent service for patients.**
- **Put in place an action plan to address immediate primary care paediatric eye services issues in the Dublin area.**

2.3 Project Methodology

The work of the PCESRG included the following tasks:

- Reviewing existing eye care services and resources in acute and primary care settings, including site visits.
- Auditing waiting lists in the Dublin paediatric hospitals.
- Conducting an extensive consultation exercise with professional and patient stakeholders.
- Determining best practice clinical models of referral, assessment and treatment for Ireland based on international evidence and supported by exemplar Irish models.
- Developing care pathways for the best management of the main paediatric and adult eye conditions in a primary care setting.
- Determining standards for clinical governance and accountability across the full range of primary care eye services.
- Developing an integrated primary care eye service model that will improve access and ensure equity for patients.
- Considering future service requirements incorporating evolving technologies, demographic challenges and their impact on workforce planning, training and resources.
- Agreeing a set of recommendations that will address the existing service deficits and ensure a high-quality, accessible and equitable primary care eye service across the country that will deliver excellent patient outcomes while ensuring value for money.

2.4 Meetings Schedule

The PCESRG met for the first time in August 2014 and thereafter on a monthly basis until September 2015 with final meetings in March and April 2016 - a total of 16 meetings. A number of subgroups also met, as required, during this period and considerable work was also conducted via email and teleconferences in between the scheduled meetings.

2.5 Stakeholder Engagement

Consultation with parents, adult users, professionals, professional groups and potentially affected parties was considered to be an essential part of the work of the PCESRG and was accordingly prioritised.

The PCESRG identified the following stakeholder groups for a comprehensive consultation exercise, which took place in December 2014:

- Parents
- Adult service users
- Professionals
- Representatives of professional associations and groups
- External stakeholders

A range of consultative methodologies were employed. These included:

- An eye services survey,
- An invitation to community and hospital staff to provide feedback
- A review of feedback collated by the HSE's Advocacy Unit
- An extensive consultation process with professional groups and external stakeholders.

The consultation process was held in December 2014 and the following stakeholders were invited to attend and/or to provide written submissions:

No	Stakeholders
1	Association of Optometrists Ireland
2	Bord na Radharcmhastóirí/The Opticians Board
3	Chief Medical Officer, Department of Health
4	ChildVision
5	CORU – Health and Social Care Professionals Council
6	Department of Education – Visiting Teacher Service
7	Deputy Chief Nursing Officer, Department of Health
8	Disability Unit, Department of Health
9	Directors of Public Health Nursing
10	Federation of Opticians Ireland
11	Fighting Blindness
12	HSE Office of Nursing and Midwifery Services
13	Irish Association of Dispensing Opticians
14	Irish College of General Practitioners
15	Irish College of Ophthalmologists
16	Irish Guide Dogs for the Blind
17	Irish Hospital Consultants Association
18	Irish Medical Council
19	Irish Medical Organisation
20	National Coalition for Vision Health
21	National Council for the Blind Ireland
22	Nursing and Midwifery Board of Ireland
23	TUSLA – Child and Family Agency

The high priority afforded to the consultation exercise proved very valuable to the working of the group; and while it added to the overall workload, it nonetheless helped the group to understand the complexities and challenges of providing effective solutions.

3.0 THE NATURE AND PREVALENCE OF EYE DISORDERS

3.1 Introduction

According to the World Health Organisation (WHO), up to 80% of global blindness is avoidable or treatable. The corresponding figure in Europe is that approximately 50% of visual impairment is avoidable with earlier and more targeted interventions. 82% of those who are blind and 65% of those with moderate and severe blindness worldwide are aged 50 years of age and above.[4]

It is estimated that there are currently 225,000 people with low vision and sight loss in Ireland. This is projected to increase by 21% to 272,000 from 2000 to 2020. It is estimated that there are approximately 13,000 blind people living in Ireland today, with this number expected to increase by 38% to 18,000 by 2020.[1]

A significant proportion of the older population in Ireland experience sight loss which is to a large extent, preventable. Blindness and vision impairment can dramatically reduce quality of life by affecting physical, functional, emotional and social wellbeing. All of this translates into a significant economic and social impact on individuals, families, society and the State.

Current Central Statistics Office (CSO) projections estimate that the number of people aged 65 years and older will almost double over the period 2006 to 2026 (from 462,000 to 909,000).[5] Therefore, the number of people in Ireland with potential sight loss will increase substantially under current projections. Many more people will need to avail of eye care services and will expect such services to be locally accessible and provided in a timely, safe manner. Several international studies have demonstrated the effects of population growth on the level of eye care needed, which is likely to lead to a significant increase in the demand for eye care and the direct costs of appropriate eye care.[6,7] Effective prevention and management of eye conditions requires appropriately resourced early detection and treatment approaches.

3.2 Eye Disorders in Children

3.2.1 Development of Vision

Visual acuity is quite limited at birth and a newborn's eye is generally only two-thirds that of its adult size. The eyes grow rapidly over the first few years of life and visual acuity develops in tandem with this growth as the connections between the eyes and the vision section of the brain become established. Visual experience adjusts the neuronal connections so that the brain interprets the world the way the eye sees it. The critical period for vision development lasts up to approximately 8 years of age. If the visual experience during the critical period is defective the vision system develops abnormally, resulting in reduced vision. Defects in vision that are still present at this age are much less likely to respond to treatment and may be permanent. This emphasises the criticality of early detection and the treatment of eye conditions in children.

3.2.2 Description of the Common Eye Disorders in Children

Refractive Error

Refractive Error is a disturbance of the optical system of the eye leading to an out-of-focus image being formed on the retina. In myopia (short-sightedness), the image of an object is focused in front of the retina so distance vision is blurred. In hypermetropia (long-sightedness), the image of an object is focused behind the retina so near images are blurred. Astigmatism is a mixture of refractive error at different axes caused by an irregularly shaped cornea at the front of the eye, preventing the formation of a sharp retinal image.

If a child has a significant refractive error uncorrected during the critical period of visual development, his or her vision may not develop properly. If the refractive error is not corrected until after the critical period or in adulthood, the child may not achieve normal vision.

It is normal for infants to have a significant degree of hypermetropia due to the small size of their eyes. This

hypermetropia generally reduces quite rapidly over the first few years and glasses are only required if the hypermetropia is excessive. Myopia in young children is uncommon but is quite a frequent development from mid-primary school years through to early adulthood. In Asia, it can affect up to 95% of students by school-leaving age.[8]. Astigmatism is also common in infants and young children; it only needs to be corrected with glasses if it affects visual acuity or causes headache or eye strain.[9]

Strabismus

Strabismus (often referred to as squint) is the medical term for a misalignment of the eyes. The consequences of constant strabismus in childhood are that it may cause amblyopia (see below) and uncorrected strabismus can have a significant negative psychosocial impact. Negative social prejudice can have a detrimental impact of socialisation and future employment.[10] Children with noticeable strabismus have been shown to be negatively judged by their peers and are less likely to be invited to social events.[11] The exact prevalence of strabismus varies across the literature; it can be more prevalent for certain age cohorts due to the stages of visual development.[12]

The following are risk factors for childhood strabismus:

- *Refractive Error:* uncorrected hypermetropia may cause a child to use excessive accommodative convergence in an attempt to focus. This excessive convergence often results in an intermittent or constant esotropia (turning in of the eye). Unilateral refractive error may disrupt binocular fusion and lead to strabismus.
- *Family History:* if a parent had strabismus or needed glasses from an early age there is an increased chance that their child may also be affected.
- *Ocular Pathology/Eye Conditions:* other eye conditions such as cataract (detailed below) that can cause poor vision may cause a strabismus to develop in this eye.
- *Prematurity:* children born early (before 32 weeks) and with a very low birthweight have an increased risk of developing a strabismus and or retinopathy of prematurity (ROP).
- *Systemic Conditions:* the incidence of strabismus is higher in children with conditions such as cerebral palsy and Down syndrome,[13] hydrocephalus and cranial abnormalities.

Amblyopia

Commonly known as 'lazy eye', amblyopia is a reduction of visual acuity in one or both eyes, usually in an otherwise normal eye. Prevalence rates vary across studies and range from 0.6% to 5.3% of the population.[12] This reduced vision persists even after correction of refractive error and/or treatment of any coexistent pathological obstruction. The essential factor to the development of amblyopia is the presence of an abnormal retinal image in one or both eyes during maturation of the visual system. If a child has blurred vision or a poorer quality of vision in one eye (due, for example, to uncorrected refractive error, strabismus or cataract), then amblyopia may develop. Amblyopia results in lifelong visual impairment if not treated in childhood.

A child with strabismus can develop amblyopia in the eye which has the strabismus. This is called strabismic amblyopia. Some children may have amblyopia but not squint, called anisometropic amblyopia and it is caused by one eye being more long-sighted (hypermetropic) or short-sighted (myopic) than the other eye, thereby requiring different strength of glasses for each eye. In cases of high bilateral refractive error, particularly with astigmatism, amblyopia can affect both eyes; the eyes being straight but vision is reduced.

Amblyopia results in a permanent reduction in vision, unless treated. There are different ways to treat an amblyopic eye and treatment is more successful when vision is still developing before the age of 7–8 years. In children with strabismus/anisometropic amblyopia aged less than 7 years, 75% achieved vision of 6/9.5 after 6 months of treatment which highlights the effectiveness of treatment.[14] Therefore, timely detection and rapid access to treatment is vital. A beneficial effect of early diagnosis and treatment of this condition includes improved visual acuity.

A Danish study found that amblyopia was the leading cause of 28% of unilateral blindness in 60–80-year-olds. Untreated amblyopia almost doubles the lifetime risk of bilateral visual impairment for patients with amblyopia, as they have only one well functioning eye.[15] Accidental trauma is more common in individuals with one 'good' eye.[16] Career choices may be limited where good stereovision is a prerequisite, such as aviation. Good vision in both eyes may increase the likelihood that ocular alignment will be maintained post-squint surgery.

Medical Conditions

Ophthalmology is closely linked to General Medicine and many paediatric conditions are represented in the eye, either presenting first to the ophthalmologist or requiring ophthalmology consultation and/or follow-up. Examples include prematurity, down syndrome, stickler syndrome, neurofibromatosis, juvenile arthritis and tuberculosis.

3.2.3 Overview of Treatment Options

Glasses

Treatment of a significant refractive error (optical defocus) with glasses is the cornerstone of therapy for strabismus and amblyopia. Optical correction alone will improve vision in amblyopia by 2 lines or more in two thirds of children.[17] In some cases, this will be sufficient to fully treat amblyopia but for others further treatment by means of occlusion therapy (patching) will be needed.

Occlusion Therapy (Patching)

Occlusion therapy is used to improve the vision in a lazy or amblyopic eye. The child's better eye will be covered with a patch forcing the child to use their weaker eye to see. This allows the brain to strengthen the connection with the lazy eye. Occlusion therapy is prescribed for a set period of time per day; the therapy is determined by the depth of amblyopia, age of the patient and type of amblyopia. It is possible to use eye drops as an alternative to a patch. Atropine drops can be prescribed by an ophthalmologist to blur the vision in the child's good eye to promote the use of the weaker eye, just like when wearing a patch.

Convergence Insufficiency

Convergence is the ability to draw the eyes together to look at close objects. A weakness in convergence can result in symptoms such as headaches and double vision. In some cases, convergence insufficiency exercises, prescribed by an orthoptist, can be used to strengthen the ability of the eyes to work together. This type of treatment may be helpful in symptomatic children.[18]

Botulinum Toxin Injection

In some cases, children with strabismus may be treated with botulinum toxin injection, e.g. in cranial nerve palsies and infantile esotropia.

Surgery

Once a child has had glasses correction and therapy for amblyopia and if a significant misalignment persists an operation may be required to improve ocular alignment. Surgery is usually performed under general anaesthetic as a day case procedure. This surgery will not improve vision in a lazy/amblyopic eye and glasses will usually need to be worn after surgery. The suitability and timing of strabismus surgery will vary on a case-by-case basis, taking into account clinical and parental opinion. It is not uncommon for more than one operation to be necessary.

3.2.3.5.1 Declining Rates of Strabismus Surgery

There have been a number of studies which have confirmed a significant decrease in the rate of strabismus surgery over the past few decades.[19-22] The decrease is still present after potential confounding variables, such as falling birth rates, changes of funding models and changes in surgical techniques and procedures are accounted for. The reported admission rate for strabismus surgery in England fell from 188.8 episodes per 100,000 population in 1968 to 64.1

episodes per 100,000 in 2010[23]. There are a number of possible reasons for this, the most compelling of which is the change in strabismus management brought about by earlier detection of defects and correction of refractive error with the appropriate glasses at the earliest opportunity. Clinical evidence is clear that full correction of hypermetropia upon detection of esotropia (the most frequent form of childhood strabismus) reduces the need for surgery at a later stage.

3.3 Eye Disorders in Adults

Vision loss in adults in developed countries is caused by five main eye conditions:

- Refractive error
- Age-related macular degeneration (AMD)
- Glaucoma
- Cataract
- Diabetic retinopathy

According to the register of the National Council for the Blind in Ireland, (2010)[2], AMD is the primary cause recorded for 23% of people registered as blind; this proportion has remained almost constant since 2003.[24] Other causes of blindness include glaucoma (8%), diabetes (4%) and cataracts (2%). The primary causes of blindness derived from the NCBI's register are consistent with WHO data on the causes of vision impairment in developed regions.[25]

3.3.1 Description of the Common Eye Disorders in Adults and Their Treatment Options

Refractive Error

This is a disturbance of the optical system of the eye leading to an out-of-focus image being formed on the retina. In myopia, the image of an object is focused in front of the retina so distance vision is blurred. In hypermetropia the image of an object is focused behind the retina so near images are blurred. Astigmatism is a mixture of refractive error at different axes caused by an irregularly shaped cornea at the front of the eye, preventing the formation of a sharp retinal image.

Age-Related Macular Degeneration (AMD)

This is the leading cause of severe visual loss for those aged 60 years of age and over, with an initial prevalence rate of 5% increasing to 13% in adults aged 74 years and over.[26] There are two types: (a) dry AMD, which is the most common form of the condition and develops slowly, eventually leading to loss of central vision; and (b) wet AMD, which is caused by leaky blood vessels inside the eye. Although wet AMD is less common than dry AMD, it can cause a more rapid loss of vision and is responsible for 90% of cases of severe vision loss.[27, 28] While wet AMD can develop quickly, if diagnosed and treated early, sight can be maintained and some people may even see an improvement.[29]

There is no treatment for dry AMD whereas wet AMD is treatable. Prior to 2005, the treatment possibilities for wet AMD were limited to photodynamic therapy and laser; these treatments were only applicable in a very small number of patients. Wet AMD is now usually treated with intravitreal injections into the eye. Regular treatment is required by patients from the time of diagnosis and for many years afterwards. Patients who are diagnosed with wet AMD need rapid access to ophthalmic care. Early treatment can achieve a good outcome by preventing sight loss which, because of the age profile of patients, can contribute to maintaining independent living. Patients with a suspicion of this condition are referred either by their optometrist or general practitioner. Many patients accidentally discover visual loss due to this condition and then present to ophthalmic departments as emergencies.

Glaucoma

This is an eye condition that causes damage to the optic nerve, which transmits images to the brain, with a prevalence rate of 1% increasing to 7% in adults aged 74 years and over.[30-31] The eye needs a certain amount of pressure to maintain its shape and size. However, excess fluid within the eye can increase the pressure on the optic nerve beyond normal levels. It is a silent disease in its early stages with few symptoms until loss of vision is advanced and irreversible. The main risk factors for glaucoma are advancing age, family history, high intraocular pressure. People of African and/or Hispanic descent are more susceptible to the condition.

Glaucoma is noted as being responsible for 8.3% of cases of blindness on the NCBI register in 2010[2] and is the second most common cause of blindness after age-related macular degeneration. In the advanced stages the visual impairment is profound as the entire field of vision is affected. Visual loss from glaucoma is preventable if it is diagnosed and treated in the early stages. Glaucoma patients require ongoing assessment to ensure preservation of vision and good response to treatment. Treatment of glaucoma is managed with eye drops and in some cases surgery is required.

Cataract

Cataract is clouding (opacification) of the lens of the eye. The prevalence is 58% in adults aged 74+ years.[32] It usually develops gradually leading to deterioration in eyesight, resulting in increasingly blurred and cloudy vision, glare, and may eventually lead to blindness. Cataracts are a common problem. Surgical treatment involves removing the patient's cloudy lens and implanting an artificial lens.

Diabetic Retinopathy

Diabetes mellitus is associated with the development of a number of complications. Diabetic retinopathy is a common complication of diabetes which affects the small blood vessels in the lining at the back of the eye (the retina). It can cause the blood vessels in the retina to leak or become blocked and damage a person's vision, potentially resulting in blindness. Timely and appropriate care for people with diabetes can significantly reduce visual loss over time, improve patients' quality of life, and reduce the financial burden associated with the complications of visual impairment. Effective treatment of diabetic retinopathy may include using heat from a laser to seal or destroy abnormal, leaking blood vessels in the retina (laser photocoagulation), injections into the eye (intravitreal injections) or the surgical removal of the vitreous gel from the middle of the eye (vitrectomy).

4. EXISTING EYE CARE SERVICES IN IRELAND

4.1 Historical Background

Ophthalmic care in Ireland is delivered in both the community and the acute care setting. Hospital consultant ophthalmologists, medical ophthalmologists, community ophthalmic physicians, general practitioners (GPs), area medical officers (AMOs), orthoptists, optometrists, public health nurses (PHNs), school public health nurses (SPHNs), clinical specialist eye nurses, registered general nurses (RGNs), dispensing opticians and ophthalmic technicians all deliver eye and vision care. In the community setting community ophthalmic physicians are employed directly by the HSE and are located in either primary care facilities or hospitals.

The Community Ophthalmic Services Scheme (COSS) is a national fee-per-item service scheme which was introduced in 1979. It is a community eye scheme under which medical card holders aged over 16 years can be seen by ophthalmologists, community ophthalmic physicians, optometrists or dispensing opticians within easy reach of their own homes. It comprises the following; Community Optometric Services, Community Spectacle Dispensing Services and Community Medical Ophthalmic Services. These services are provided on a contract basis by professionals under the COSS. Eligible patients can receive an eye examination and be provided with prescribed optical appliances in accordance with a national schedule of approved optical appliances. In 2014, under the scheme, the Primary Care Reimbursement Service (PCRS) provided funding for 317,731 General Medical Service (GMS) persons for 756,305 treatments costing €29,380,087. Eye examinations by Optometrists/Ophthalmologists totalled 324,668; complete glasses (distance, reading and bifocals) provided totalled 431,637. There were 586 registered optometrists contractors under the scheme in 2014.

In 2004, the Community Ophthalmic Services Medical Treatment Scheme (COSMTS) was created as a pilot project. In response to an identified need, it engages four practices (across seven locations: Ranelagh, Fairview, Bray, Naas, Athlone, Tullamore and Cork) to provide medical and minor surgical care to patients outside of the acute care setting. The scheme has continued since 2004, limited to the four practices across the seven locations. It was intended that the scheme would be extended nationally on a phased basis following an evaluation in 2006. The HSE explored options in this regard but resource constraints prevented any further rollout beyond the original pilot practices. There were 22,275 attendances under this scheme in 2013 with an average cost of €77.49 per attendance.

In the hospital setting, there are 11 surgical eye units and 13 medical treatment eye units (see Table 4.5). The eye units are staffed by consultant ophthalmologists, non-consultant hospital doctors, nurses, orthoptists and technicians. In some cases, community ophthalmic physicians also provide a service in the acute setting.

4.2 Current Provision of Eye Care Services (Public Sector)

Both primary care and hospital eye care services are experiencing considerable challenges in meeting current demand due to deficiencies in relation to staffing, processes and infrastructure. The services provided across the country are inconsistent, there are varying levels of access and some local outsourcing to private providers. Waiting times to access services are, in the main, very high and the service lacks standardisation and good clinical governance. The rapid expansion in medical treatments available for both paediatric and adult conditions also mean that clinical staffing is insufficient to meet the needs of patients for medical care. There is geographic disparity in relation to existing primary care eye care posts across the country, e.g. there is no HSE directly provided primary care eye service for children or adults in Dublin South and Dublin South West and there are very limited services in Cork.

4.2.1 Primary Care Services

Community ophthalmic physicians are employed by the HSE with the majority working in local primary care clinics and some providing a number of sessions in a hospital setting. They work across 75 locations as detailed below in Table 4.1. Providing sessions in a hospital setting helps to maintain close working relationships with hospital colleagues and promotes integrated working. They provide services to (a) children referred from vision surveillance and screening,

Community Healthcare Organisation (CHO)	Work Locations of Community Ophthalmic Physicians		
CHO 1	Buncrana Health Centre	Dungloe Health Centre	Monaghan Health Centre
	Carndonagh Health Centre	Letterkenny Health Centre	Our Lady's Hospital, Manorhamilton
	Cavan General Hospital	Lifford Health Centre	Sligo Primary Care Centre
	Carrick-on Shannon Health Centre	Mater Misericordiae University Hospital, Dublin	Sligo University Hospital
	Donegal Town Health Centre	Mohill Health Centre, Leitrim	Virginia Health Centre
CHO 2	Ballina Health Centre	Loughrea Health Centre	Swinford Health Centre
	Ballinasloe Health Centre	Mayo County Clinic, Castlebar	University Hospital Galway
	Belmullet Health Centre	Roscommon University Hospital	
	Boyle Health Centre	Shantalla Health Centre, Galway	
CHO 3	Ballynanty Health Centre	Nenagh Health Centre	Thurles Health Centre
	Ennis Health Centre	Newcastlewest Health Centre	University Hospital Limerick
	Kilrush Health Centre	Roscrea Health Centre	
	King's Island Primary Care Centre	Shannon Health Centre	
CHO 4	Caherciveen Health Centre	Grattan Street Health Centre, Cork	Listowel Health Centre
	Clonakilty Health Centre	Kanturk Health Centre	Mallow Health Centre
	Cork University Hospital	University Hospital, Kerry	Skibbereen Health Centre
	Dingle Health Centre	Killarney Health Centre	
	Dunmanway Health Centre	Killorglin Health Centre	
CHO 5	Carlow Health Centre	Kilkenny Health Centre	University Hospital Waterford
	Cashel Health Centre	New Ross Health Centre	Waterford Community Services
	Clonmel Health Centre	St Joseph's Hospital, Dungarvan	Wexford Health Centre
	Gorey Health Centre	Enniscorthy Health Centre	
CHO 6	Arklow Health Centre	Greystones Health Centre	Wicklow Primary Health Care Centre
	Bray Health Centre	Shillelagh Health Centre	
CHO 7	Athy Health Centre	Blessington Health Centre	Newbridge Health Centre
	Baltinglass Health Centre	Maynooth Health Centre	Vista Primary Care Centre, Naas
CHO 8	Athlone Health Centre	Longford Health Centre	Midland Regional Hospital Tullamore
	Dundalk Primary Care Centre	Mater Misericordiae University Hospital, Dublin	Navan Health Centre
	Dunshauglin Health Centre	Midland Regional Hospital Mullingar	
	Royal Victoria Eye and Ear Hospital	Midland Regional Hospital Portlaoise	
CHO 9	Ashgrove House, Dublin	Beaumont Hospital, Dublin	Temple Street Children's University Hospital

Table 4.1: Work locations of community ophthalmic physicians

detailed at section 4.2.3, and (b) to adult medical card patients. The comprehensive range of eye care includes detailed assessment, diagnosis and treatment of eye conditions, the provision of prescriptions for glasses, and the provision of laser treatment and minor eye surgery.

Referral sources include Area Medical Officers (AMOs), General Practioners (GPs), Public Health Nurses (PHNs), School Public Health Nurses (SPHNs), Registered General Nurses (RGNs), Consultant Ophthalmologists, Ophthalmologists and Optometrists via the patient's GP. Many community ophthalmic physicians work in isolation, as single practitioners, with under-resourced clinics and inadequate diagnostic equipment. RGNs work as part of a team with the community ophthalmic physician in some, but not all, primary care clinics.

The primary-care based eye service, which initially grew as a means of treating and managing children who fail school screening as stipulated by the Health Act, 1970,[33] has not developed adequately to meet the changing needs of patients in the community. In line with Government policies, such as *Future Health*[34] the majority of services should be provided from a primary care setting. This principle has particular relevance to eye care services where a significant number of patients could have their specialist care delivered in the primary care setting with appropriately resourced services. This proposed change in the geographic delivery of care is endorsed by professionals involved in eye care. The realignment of eye care services from the acute hospitals to the community will require integration between the acute division and the primary care division and must be underpinned by an electronic patient record to ensure that patients can easily be transferred between the hospital and the community should their care require it. Such a shift will provide timely services to patients in a primary care location, while creating large capacity opportunities for more complex work to be carried out in acute facilities. Currently, acute hospitals conduct much work that can be safely and effectively completed in primary care.

As detailed under section 4.1, there are also two publicly funded eye care schemes currently in place within the community setting. One is the Community Ophthalmic Services Scheme (COSS), and the other is the Community Ophthalmic Medical Treatment Scheme (COSMTS) (see Table 4.2).

A separate scheme, the Optical Benefit Scheme, is run by the Department of Social Protection (DSP). It provides services to persons who have made the required number of Pay-Related Social Insurance (PRSI) contributions. Qualified persons are eligible for an eye examination with an optometrist every two years unless a more frequent eye examination is determined to be clinically necessary. Dispensing fees are not currently covered by the scheme.

	Name Scheme	Provider of Scheme	Who is Entitled to Access Scheme?	What Services are Provided under the Sceme?
1	Community Ophthalmic Services Scheme (COSS)	Health Service Executive	Adult Medical Card Holders	One eye examination for glasses with an ophthalmologist or optometrist free of charge every two years plus the cost covered for a certain range of glasses, if required.
2	Community Ophthalmic Services Medical Treatment Scheme (COSMTS)	Health Service Executive	Adult Medical Card Holders in Cork, Dublin, Kildare & the Midlands	Provision of minor surgery/treatment by an ophthalmologist, as required.
3	Optical Benefit Scheme	Department of Social Protection	Adults with a specified number of PRSI contributions paid	One eye examination for glasses with an optometrist free of charge every two years.

Table 4.2: Overview of ophthalmic schemes

Under the GMS scheme, GPs receive an annual capitation fee to see medical card and GP visit card holders for a range of issues including ophthalmic care. It is difficult to determine the number of ophthalmic appointments carried out by GPs as in many cases the purpose of the visit is recorded as a general consultation or prescription. GPs receive an additional payment for certain special items of service. Among the special items of service is 'Eye: Removal of Adherent Foreign Body'; this represents less than 1% of the total payments to GPs for special consultations. In 2014, 12,414 patients attended a GP for removal of a foreign body from an eye at a total cost of €307,874.

4.2.1.1 Staffing Levels in Primary Care Eye Services

Across the nine Community Healthcare Organisations, there is a total of 84.42 whole-time equivalent (WTE) staff involved in the direct provision of primary care eye services, with 48 of these being clinical staff. The service is overly reliant on community ophthalmic physicians without adequate skill mix and there is only one optometrist employed directly by the HSE in the entire country. The greatly under-resourced service results in a reduced, non-standard range of services being provided. Senior community ophthalmic physicians are frequently managing cases of lower complexity and often working in isolation. This scenario is both inefficient and risky and is not sustainable for safety, professional, economic and overall patient service reasons.

The following Table 4.3 details the number of community ophthalmic physicians, orthoptists, nurses and administration staff currently assigned to primary care eye services.

Community Healthcare Organisation (CHO)	Community Ophthalmic Physician WTE	Orthoptist WTE	Optometrist WTE	Nurse WTE	Administration Staff WTE	Total
CHO 1	7.7	3	sessional	0.5	8.85	**20.05**
CHO 2	5.1	0.6		2.6	4.6	**12.9**
CHO 3	2.3	0		0.18	3.16	**5.64**
CHO 4	2 + sessions	0.98 + sessions		2.12	4.5	**9.6**
CHO 5	4.2	3.1		2.6	7.4	**17.3**
CHO 6	1	0		0	0.5	**1.5**
CHO 7	0.87	0.57		0.75	2.1	**4.29**
CHO 8	2	0.64		0.6	3.7	**6.94**
CHO 9	1.6	2		1	1.6	**6.2**
Total	26.77 + sessions	10.89 + sessions	sessions	10.35	36.41	**84.42**

Table 4.3: Current staffing levels as of February 2016

Note: The administration staff are not solely dedicated to ophthalmic services; they work across many primary care services. Many of these staff support the management of the COSS rather than supporting eye care clinics.

Table 4.4: Community Ophthalmology Waiting Lists as at September 2016

Community Healthcare Organisation (CHO)	Local Health Office (LHO)	No. Waiting for treatment 0 ≤ 12 weeks	No. Waiting for treatment > 12 weeks but ≤ 26 weeks	No. Waiting for treatment > 26 weeks but ≤ 39 weeks	No. Waiting for treatment > 39 weeks but ≤ 52 weeks	No.Waiting for treatment > 52 weeks	Total No. Waiting for treatment
CHO 1	Cavan Monaghan	191	291	0	0	0	482
	Donegal	561	416	179	100	77	1333
	Sligo Leitrim	138	52	33	0	7	230
	CHO 1 Total	**890**	**759**	**212**	**100**	**84**	**2045**
CHO 2	Galway	242	196	126	98	1109	1771
	Mayo	197	96	26	12	27	358
	Roscommon	26	56	30	44	142	298
	CHO 2 Total	**465**	**348**	**182**	**154**	**1278**	**2427**
CHO 3	Clare	31	68	61	61	256	477
	Limerick	221	232	134	110	301	998
	North Tipperary East Limerick	297	170	88	46	30	631
	CHO 3 Total	**549**	**470**	**283**	**217**	**587**	**2106**
CHO 4	Kerry	519	564	466	305	2227	4081
	North Cork	36	39	702	208	2673	3658
	North Lee South Lee	1259	781	518	554	3261	6373
	West Cork	96	86	58	0	0	240
	CHO 4 Total	**1910**	**1470**	**1744**	**1067**	**8161**	**14352**
CHO 5	Carlow Kilkenny	136	88	59	61	423	767
	South Tipperary	129	107	40	0	0	276
	Waterford	56	45	46	4	0	151
	Wexford	122	136	97	0	0	355
	CHO 5 Total	**443**	**376**	**242**	**65**	**423**	**1549**
CHO 6	Wicklow	169	0	0	0	0	169
	CHO 6 Total	**169**	**0**	**0**	**0**	**0**	**169**
CHO 7	Kildare West Wicklow	248	303	239	331	440	1561
	CHO 7 Total	**248**	**303**	**239**	**331**	**440**	**1561**
CHO 8	Louth	187	193	131	60	162	733
	Meath	218	238	317	348	1094	2215
	CHO 8 Total	**405**	**431**	**448**	**408**	**1256**	**2948**
CHO 9	Dublin North Central, Dublin North, Dublin North West	396	482	732	555	1470	3635
	CHO 9 Total	**396**	**482**	**732**	**555**	**1470**	**3635**
Overall Total		**5475**	**4639**	**4082**	**2897**	**13699**	**30792**

Note Regarding Data Collection: It is evident from the workings of the PCESRG that there are significant deficiencies in relation to the collection and reporting of waiting list data. There is no electronic system linked to a patient management system (PMS) that would generate waiting list data. Instead waiting lists are collated manually via paper referrals. In addition, some areas do not appear to have a waiting list as they have little or no local ophthalmic services and are therefore not accepting referrals, e.g. areas in CHO 6 and CHO 7. It is clear that a better system of recording referrals and management of eye care services is required. Notwithstanding the data collection deficits, it is evident that there are large waiting lists in several areas that are of concern. These waiting lists result from poorly resourced services, inadequate processes, overreliance on paper-based systems and a lack of appropriate clinical governance.

4.2.2 Acute Services

There are currently 24 hospitals with ophthalmic departments in Ireland delivering surgical and/or medical services. These are listed in Table 4.5 below:

Consultant-Led Surgical Service	Consultant-Led Medical Service	Medical Service
Temple Street Children's University Hospital, Dublin	AMNCH, Tallaght, Dublin	Cavan General Hospital
Cork University Hospital	Beaumont Hospital, Dublin	Connolly Hospital Blanchardstown, Dublin
Mater Misericordiae University Hospital, Dublin	Letterkenny University Hospital	Louth County Hospital, Dundalk
Our Lady's Children's Hospital, Crumlin	South Infirmary Victoria University Hospital, Cork	University Hospital Kerry
Royal Victoria Eye and Ear Hospital, Dublin	St James's Hospital, Dublin	Midland Regional Hospital Mullingar
Sligo University Hospital		Midland Regional Hospital Tullamore
St Columcille's Hospital, Loughlinstown, Dublin		Our Lady of Lourdes Hospital, Drogheda
St Vincent's University Hospital, Dublin		St Michael's Hospital, Dún Laoghaire, Dublin
University Hospital Galway		
University Hospital Limerick		
University Hospital Waterford		

Table 4.5: List of hospitals providing surgical and/or medical ophthalmic services

These units are mainly staffed by consultant ophthalmologists, non-consultant hospital doctors, orthoptists, nurses and technicians.

Delivery of eye care has remained overly hospital-centred with a consequent lack of investment in primary care eye services. This has led to an inefficient overemphasis on hospital ophthalmic departments being utilised to treat many conditions more appropriately treatable in primary care. The public hospitals have become progressively over-crowded with (a) paediatric patients referred from surveillance and screening and (b) adults with chronic, stable disease, many of whom could be appropriately diagnosed, treated and managed in the community, if the appropriate resources were available. The overall acute workload is also increasing due to the ageing population and new treatments becoming available for conditions such as AMD. Because of the increased demand in managing chronic eye disease, the hospital service is severely impeded from delivering good turnaround times for surgical cases, such as cataract removal, treatment of strabismus and of glaucoma by trabeculectomy.

4.2.2.1. Audit of Profile of Referrals to Dublin Acute Paediatric Ophthalmic Services and One Dublin Community Ophthalmic Service

As part of this review, an audit was designed and undertaken in 2015 to
(a) identify the number of paediatric patients waiting for eye appointments at:

- Temple Street Children's University Hospital (TSCUH)
- Our Lady's Children's Hospital, Crumlin (OLCHC)
- Royal Victoria Eye and Ear Hospital (RVEEH)
- Ashgrove House, CHO 9

and
(b) determine which patients could be managed appropriately in community eye care services if sufficient capacity were made available.

The audit was designed by clinicians and it involved an assessment of each referral to each acute service by an orthoptist, contracted specifically for this purpose. The audit was required as the lack of reliable data from the sites in question was evident and this deficit in knowledge was hampering the work of the PCESRG. The results of this extensive case-by-case audit demonstrated that almost all (96%) of GP paediatric referrals to the sites could be effectively managed in the community.

Summary of the Audit Results:

- Some 4089 children were on the waiting list for eye appointments across the four sites.
- The longest expected waiting times were 28 months for TSCUH; 26 months for Ashgrove House, CHO 9; 14 months for OLCHC; and 6 months for RVEEH.
- The highest proportion of referrals to the acute hospital waiting lists originated from GPs. These accounted for 53% of referrals to TUCUH; and 54% of the referrals to OLCHC.
- A different trend was noted for RVEEH, where the majority of referrals (80%) originated from the Public Health Nurse/Area Medical Officer service.
- Suspected strabismus accounted for 27% of referrals to OLCHC; 41% of referrals to TSCUH; and 59% of referrals to RVEEH.
- The audit determined that between 58% and 70% of all referrals reviewed were suitable to be seen in the primary care eye service.
- Of all GP referrals across the sites, 96% were deemed suitable to be treated in community services.

4.2.3 Screening

4.2.3.1 Childhood Vision Surveillance and Screening Programme

In 1999, *Best Health for Children-Developing a Partnership with Families (BHfC)*[35] was published following a review of child health screening and surveillance (0 - 12 years), which was commissioned by the Chief Executive Officers (CEOs) of the eight health boards that existed at that time. In 2000 a report on training in child health surveillance was published and funded for implementation.[36] The evidence base was updated in 2005 under *BHfC Revisited*[8].

Childhood surveillance and screening commences at birth and involves nine assessments/checks until a child is 12 years of age. Data are collated on a child's development, including visual behaviour and visual acuity. *BHfC*[3] is currently under review by the National Steering Group for the Implementation of the Revised Child Health Model.

The child vision screening checks are summarised in Table 4.6 overleaf.

Timing	History	Examination	Equipment	Health Promotion	Staff
Birth	Birth and family history Parental concern Visual behaviour	Observation: Inspection of eyes Red reflex Corneal light reflex	Ophthalmoscope Pen torch	Inform parents of normal vision development	Paediatric team
Postnatal visit	Past, birth and family history Parental concern Visual behaviour	Observation: Inspection of eyes Corneal light reflex	Pen torch	As above	GP
6–8 weeks	As above	Observation: Inspection of eyes Red reflex Corneal light reflex	Ophthalmoscope Pen torch	As above	PHN
3 months	As above	Observation: Inspection of eyes Corneal light reflex	Pen torch	As above	PHN
7–9 months	As above Ask about first-degree relatives with strabismus/amblyopia	Observation: Inspection of eyes Corneal light reflex	Pen torch	As above	PHN/AMO
18–24 months	As above	As above	Pen torch	As above	PHN
3.25–3.5 years	As above	As above	Pen torch	As above	PHN
Junior Infants	As above Parental/teacher concern	Observation: Inspection of eyes Vision assessment	Illuminated Snellen chart at 6 metres (Use the most difficult test the child can do; Snellen, then matching Sonksen Silver.). Adhesive patch occluder Replacement panel standard 20 ft/6m room (until introduction of LogMAR crowded 3 metres test as gold standard).	As above	SPHN/PHN
School exit (5th or 6th class)	As above	As for school entry Evidence for or against colour vision screening equivocal	As for school entry Ishihara colour plates where colour screening in operation	Eye protection/ Eye health Career choices	SPHN/PHN

Table 4.6: Current child vision screening as per *BHfC*

For newborn babies, a physical examination is provided by the paediatric team at birth and by GPs at the 2-week and 6-week visit (may not apply to premature babies). In line with BHfC[3], PHNs carry out an assessment of all newborn babies post-hospital discharge and at 3 months, 7–9 months, 18–24 months and 3.25–3.50 years. (The 7–9 month assessment is carried out by an AMO and a PHN in some areas, and is nurse-led in other areas). School PHNs (SPHNs) provide school health screening, including vision screening, for Junior Infants/Senior Infants and 6th class in addition to colour vision screening for 6th class. There is much variability within the system with some health areas screening Junior Infants and 6th class and other areas screening different classes. Children who fail the screening are referred into the public system by a GP, AMO, PHN, and/or SPHN.

An updated training programme for PHNs and AMOs in Child Health Screening, Surveillance and Health Promotion was produced in 2006.[37] This included a module on vision screening. Following the initial rollout of the programme, it would appear that not all areas had this training provided or had regular training updates in the intervening years and training and developmental officer posts, who were traditionally responsible for organising this training, are not in place in all parts of the country. No training was provided in some areas.

A number of audits conducted by orthoptists and a collation and analysis of referral rates for 2015 for the PCESRG have shown significant variance in the screening referral rates and true positive rates from the child surveillance checks and the school vision screening. Referral rates from school vision screening varied between 6.5% and 28.5% across the country. Reasons for this could include high sensitivity but low specificity with the preschool referral criteria (there is a low predictive value when single criteria are considered only, e.g. parental concern) and lack of regular training on the vision module from *BHfC*. Irrespective of the reasons, this is an area of concern and points to inconsistent practice with consequent follow-on inefficiencies and opportunity costs elsewhere in the much-stretched service.

Children often do not have their vision screening performed until late Junior Infants/early Senior Infants, even though *BHfC Revisited*[8] recommends that the screening is conducted in Junior Infants. Ideally, the children should be seen as early as possible in Junior Infants to facilitate an early referral to primary care eye clinics for management of conditions such as amblyopia within the defined treatment window. Due to long waiting lists there are clear risks that children with these conditions may not receive the treatment they need within that treatment-time window with the risk of them having lifelong deficits.

The vision screening programme currently identifies children with reduced vision at school exit (12 years). These children are being referred directly to hospitals/primary care eye clinics for management when they could be managed safely and efficiently by their local optometrists. The current contractual arrangements with optometrists do not allow for children to access optometrists for an eye examination/prescription.

There are also varying practices across the country in relation to the funding of glasses for children. Some local health offices approve private optometric prescriptions for publicly funded dispensing of glasses, while some local health offices will approve prescriptions written by community ophthalmic physicians. In some areas, children over 8 or 9 years of age are given a letter of authorisation/voucher to attend a local optometrist, whereas in other areas this provision is not in place. Access to the service is dependent on geographic location and is inconsistent across the country with non-standardisation and inequity of access to services being a dominant feature.

4.2.3.2 Diabetic Retinopathy Screening

As previously stated, diabetic retinopathy is a common complication of diabetes which affects the small blood vessels in the lining at the back of the eye. When the condition is caught early, treatment is effective at reducing or preventing damage to sight. Any person with diabetes, either type 1 or type 2, is at risk of developing diabetic retinopathy. The longer a person has diabetes, the more likely they are to develop diabetic retinopathy.

RetinaScreen is the National Diabetic Retinal Screening Programme, recommended by the National Clinical Programme for Diabetes. It is a Government-funded screening programme, run by the HSE National Screening Service (NSS) under the HSE Health and Wellbeing Directorate, which offers free, regular, diabetic retinopathy screening to people with diabetes aged 12 years and older. The RetinaScreen programme is outsourced to personnel who use specialised digital photography to look for changes that could affect sight. All people in Ireland who have been diagnosed with diabetes should be on the register for screening. If the programme has been informed that a person has been diagnosed with diabetes, the person is invited by letter to attend for screening. People who fail the test are referred to a Diabetic Retinal Treatment Centre, located in public hospitals, for confirmation of diagnosis and treatment if required; **www.diabeticretinascreen.ie** provides additional information on this programme.

Medical practitioners (GPs/Consultants) should check that all their patients with diabetes are registered with the National Diabetic Retinal Screening Programme and they can make arrangements to have them placed on the register through the call centre (1800 454555) or the RetinaScreen website (**www.diabeticretinascreen.ie**).

4.3 Current Provision of Eye Care Services (Private Sector)

There are approximately 20 ophthalmologists working exclusively within the private sector in Ireland, although it is difficult to accurately estimate the WTE number to which this equates. The majority of ophthalmologists holding public HSE contracts also see patients privately. The community ophthalmic physicians who hold contracts with the HSE for the provision of services to public patients through the COSS scheme also see patients privately. Private ophthalmologists provide services from private consulting rooms, from private hospitals and from public hospitals in line with their public consultant contracts. All patients may attend privately but they will be required to pay for services either directly or via their health insurance plan.

There are more than 600 optometrists practising in Ireland, serving a broad base of urban and rural communities. Optometrists are the most numerous of the varied eye care professionals and they currently operate mainly in the private sector, although they may work in practices that have contracts to deliver eye care under PRSI, medical card schemes, COSS and COMSTS. In 2014, optometrists provided 95% of all adult examinations conducted within these schemes, including assessments for patients residing in nursing homes. Glasses prescribed by community ophthalmic physicians and by hospital ophthalmic surgeons/physicians are dispensed by optometrists/dispensing opticians; the cost of standard lenses and frames for all eligible patients are covered by the local CHO or the PCRS. In some CHO areas private optometrists are contracted to provide primary eye care services in order to reduce waiting lists.

4.4 Current Provision of Eye Care Services (Voluntary Sector)

The following services are provided by voluntary agencies. Each agency provided specific information regarding their services, which are detailed as follows.

4.4.1 ChildVision

ChildVision is Ireland's only national educational facility for blind and partially sighted children and young people. Children with vision impairment (some with additional multiple disabilities) can attend ChildVision from as young as newborn all the way through to 22 years of age, as residential or day students. All children attend ChildVision free of charge.

It offers a variety of services, including early intervention, a preschool class for children with multiple disabilities including visual impairment, a Montessori class, and a special needs primary school, a unit within a mainstream community college, residential facilities, and vocational training. These are supported by a therapy team which includes nursing staff, speech and language therapists, physiotherapists and occupational therapists. Specialist intervention includes horticultural therapy, equine therapy, orientation and mobility training, family resource support, Braille printing, an eye and low vision clinic along with an ocularist clinic.

The aims of ChildVision are to:

- Encourage each child to reach their full potential.
- Provide educational opportunities to children in a safe environment.
- Maintain a close relationship with every family, parent or guardian to ensure a support programme is built up around the child's closest family members to plan for a fulfilling life.
- Minimise any barriers to education and ensure all children are given access to learning and to social, physical and mental development.

4.4.2 Fighting Blindness

Fighting Blindness (FB) is a patient-led organisation and its focus is on supporting research to find novel therapies and diagnostic techniques. FB aims to cure blindness, support those living with sight loss and empower patients. FB was started in 1983 by a group of families affected by blindness; it is now a global leader in the search for cures and treatments for genetically inherited and age-related forms of blindness. In 1989, researchers at Trinity College Dublin, funded by FB, located the first known gene responsible for causing retinitis pigmentosa (RP). Since then, a further 200 genes have been discovered for RP and other retinal degenerations and the ongoing research in this area is extremely encouraging. These discoveries have also greatly contributed to the expansion of knowledge of other conditions, such as AMD. To date, FB has funded over 70 projects and invested over €15 million in research into age-related and inherited blindness at universities and colleges in Ireland and the UK.

FB also provides a counselling service, which is funded by the HSE to support clients in the Dublin area. A support group has been set up in Limerick, and FB also offers a telephone support service.

4.4.3 Irish Guide Dogs for the Blind (IGDB)

IGDB is a national charity established in 1976 with a world-class dog training and client training facility in Cork. It employs over 70 staff and works with a nationwide network of volunteers who help to raise the dogs and also the funds to support the organisation. IGDB works with children and adults from age 4 to 80+ years, providing the following services; guide dogs for people who are blind or vision impaired, assistance dogs for families of children with autism, orientation and mobility training, independent living skills training and a child mobility programme. There is a lower provision of guide dogs in Ireland (1.75%) compared to other countries (2–3%). The client base of the IGDB is approximately 500, with on average a 12–18 month waiting time for a guide dog.

Loss of sight has a major personal impact on people's daily lives. It also has a significant economic impact on individuals, families, society in general and the State. Mobility training with a guide dog or long cane enables a vision-impaired person to better participate in society through work, study and leisure. In many cases, it enables participation in the workplace with the obvious impact on that person's mental, physical and financial wellbeing. The vision-impaired person moves from being dependent to being independent, which benefits the individual, society and the exchequer.

4.4.4 National Council for the Blind Ireland (NCBI)

NCBI was founded in 1931 and is the national sight loss agency. It offers support and services to people of all ages who are experiencing difficulties with their eyesight. It provides a service to approximately 7,000 people every year; 2,000 of whom present for the first time to NCBI. Almost 95% of the people who access the NCBI service every year have some degree of useful vision, while less than 5% are blind. With an ageing population, the number of people needing to access services is increasing by 12% each year.

NCBI offers community-based services to help people to adapt to sight loss and maintain their independence. These services include emotional support to the individual experiencing loss of vision and to their families, advice and information on all aspects of vision loss as well as practical support and solutions to the challenges encountered by

people with vision loss. The majority of people in Ireland with sight loss retain some useful vision and can be assisted to maximise their remaining vision in various different ways.

Following referral, NCBI arranges to meet with the person to assess the degree and impact of sight loss. It then offers individualised solutions such as magnification and/or technical aids, advice on lighting and contrast solutions, strategies to manage daily activities with a vision loss, orientation and mobility training as well as general advice on other adaptations that can be made to reduce the impact of loss of vision. The overall aim of NCBI services is to enable people to live an independent life of their choice. As the impact of vision loss for each person varies depending on what it is they wish to achieve as well as the type and degree of vision loss they experience, the service offered to each person will differ.

NCBI's Rehabilitation Training Centre in Dublin equips people with skills to increase independence and explores education or employment options. NCBI has a Braille, large-print and audio-book library and produces popular Irish newspapers and magazines in audio and in Braille. A range of assistive technology solutions is available to help people access information and communicate independently. The staff at NCBI offer guidance in selecting and using assistive technologies that will meet a person's requirements. NCBI promotes the accessible design of technology for use by everyone, including people with disabilities. The NCBI Library and Media Centre converts printed information into formats accessible to people with sight loss for a range of voluntary, public and private organisations.

Referral to NCBI services can be made online via their website **www.ncbi.ie** at 'Make a Referral to NCBI' or by letter.

4.5 Department of Education and Skills Visiting Teacher for Visual Impairment (VTVI) Service

The VTVI service provides support for children who are visually impaired from diagnosis until they complete secondary school education. Each visiting teacher is responsible for a particular region and is allocated a caseload of children. The visiting teacher supports the children, parents/guardians, teachers and other professionals involved with the child. The nature and frequency of visits will depend on a range of factors, including the age of the child, severity of impairment, educational placement, and individual learning needs.

The service is available at preschool, primary and post-primary levels and includes:

- Guidance and support to preschool children and their parents in the home, including unbiased information to support parents in making informed choices for their child.
- Specialist teaching, support and monitoring of progress.
- Advice on curricular and environmental implications, including the use of assistive technology.
- Supporting, advising, training and liaising with parents, teachers and other professionals.
- Ensuring reasonable accommodations are provided to post-primary students by the State Examinations Commission.
- Providing a transition report to students leaving secondary schools in order to assist with the smooth transition to third level.

Referrals are accepted for children with a visual impairment that is so serious as to impair significantly their capacity to see and where the visual impairment is not satisfactorily corrected by the wearing of glasses and/or contact lenses. These children include:

- Children with a visual impairment of 6/18 or less.
- Children with a deteriorating visual condition.
- Children with a significant visual field loss.

The referral of children to the VTVI is often made by HSE ophthalmic services, or by the child's parents or school. Other referral agencies may include the National Council for Special Education (NCSE) and NCBI. Referrals are made to the VTVI service using the referral form on the Department of Education and Skills, website;
https://www.education.ie/en/Parents/Services/Visiting-Teacher-Service/Visiting-Teacher-Referral-Form.pdf
The referral form must be accompanied by an ophthalmologist's report.

4.6 Eligibility

4.6.1 Introduction

The legislative basis for determining eligibility for health services, including eye care services, is governed by the Health Act 1970 as well as the Health (Amendment) Act 1996[38] and the Redress for Women Resident in Certain Institutions Act 2015.[39] The 1996 Act and the 2015 Act provide for an ophthalmic service, including optical appliances, specified in section 67 of the Health Act 1970 to be made available to persons who have contracted hepatitis C directly or indirectly from the use of human anti-D immunoglobulin or the receipt within the State of another blood product or a blood transfusion and to women who were admitted to and worked in certain institutions, including the Magdalene Laundries.

It is difficult for parents and service users to understand the various eligibility conditions and the impact that these conditions have on the availability of ophthalmic services. Below is a current list of the various eligibility arrangements:

4.6.2 Community-Based Services

4.6.2.1 Services for Children

Section 66 of the Health Act 1970 provides for the Health Service Executive to make a health examination available for children who are under 6 years of age and for pupils who attend any primary school or who are taught at home.

Section 67 provides that the HSE shall make ophthalmic treatment and optical appliances available for persons with full eligibility and for persons in respect of defects noticed at an examination carried out under section 66 and that such treatment and appliances will be made available under section 67 without charge.

Where a defect is noticed at preschool or school age examinations, children with full eligibility and limited eligibility continue to receive a follow-up service until the age of 16.

Children up to 16 years who hold a medical card are eligible for HSE eye care services under section 67 of the Act. This covers treatment and appliances for defects detected after primary school stage. Persons, aged between 16 and 18 years of age, with full eligibility can avail of the COSS, referred to previously.

Services are provided through salaried or contracted ophthalmologists, community ophthalmic physicians, orthoptists, nurses, optometrists and dispensing opticians.

4.6.2.2 Services for Adults

Under section 67 of the Health Act 1970, the HSE provides or arranges for the provision of optical treatment and appliances without charge for persons with full eligibility.

Sight testing, eye examinations and optical appliances are provided by ophthalmologists, optometrists and dispensing opticians through the COSS under a set of contract for service arrangements.

The Health (Amendment) Act 1996, provides that the HSE make available without charge ophthalmic treatment and optical appliances to persons who have contracted hepatitis C directly or indirectly from the use of human anti-D immunoglobulin or the receipt within the State of another blood product or a blood transfusion.

Under the Redress for Women Resident in Certain Institutions Act 2015 women who were admitted to and worked in certain institutions, as specified in the Schedule to the Act, are eligible for ophthalmic treatment and optical appliances without charge.

4.6.3 Hospital-Based Services

Under section 52 of the Health Act 1970 the HSE is required to provide public inpatient services (including day-case procedures), including eye care services, for persons with full eligibility and persons with limited eligibility. Certain categories of people are exempt from the charge for public inpatient services, e.g. persons with medical cards.

Persons with limited eligibility who attend at an emergency department (ED), including for emergency eye care treatment, without a GP referral, subject to certain exemptions, are liable for the statutory ED charge, which is currently €100. Certain categories of people, such as persons with full eligibility, are exempt from this charge.

The HSE provides public outpatient services to persons (adults and children) with full eligibility and to persons with limited eligibility, which includes public eye care services provided in an outpatient setting.

4.7 Clinical and Administrative Governance in the Public Services

There is a formal clinical governance structure for acute-hospital-based eye services under each hospital clinical director. Due to the fragmented nature of the primary care eye services comparable clinical governance systems are very limited. This presents risks as a result of isolated work, absence of standardised teamwork, peer review and often under-resourced services. In addition, regular engagement between the specialist eye service and the screening and surveillance services may be absent, resulting in poor communication and sometimes suboptimal referral practices.

There are a variety of administrative reporting relationships in the existing primary care eye services. The majority of community ophthalmic physicians report to their local general manager in the CHO structure and some report to the local hospital CEO (if working across the acute and primary care settings). A small number of community ophthalmic physicians have a clinical reporting relationship to their local principal medical officer or hospital-based consultant ophthalmologist. Other professionals involved in primary care eye services have a similar range of reporting structures with no standardisation across the country. The variety in reporting and governance arrangements is due to legacy issues and is inadequate in the context of a modern health service. Levels and quality of services and the interpretation of eligibility differ across the country, partly due to the absence of a standardised structure, defined reporting relationships and care pathways and protocols.

With many clinicians practising in isolation, there is also a deficit in relation to a national structure for primary eye care services that would facilitate shared learning, standardising of work practices and efficiency measures, quality and safety initiatives and a forum for collegiate working and better communication.

In relation to the contracted COSS and COSMTS (pilot), there is no formal clinical governance requirements stipulated in the contracts/service level agreements for the clinicians delivering these services. This presents a significant risk in assuring the quality, safety and effectiveness of the services provided.

4.8 Registration of Professionals

Statutory registration of a profession is a way of protecting the public from possible harm caused by poor or dangerous practice and it also provides patients with a formal complaint mechanism. Such registration helps to ensure high standards of training and practice within a profession. The registration arrangements for each profession involved in eye care are outlined as follows:

4.8.1 Consultant Ophthalmologists, Ophthalmologists and Community Ophthalmic Physicians

Under the Medical Practitioners Act 2007,[40] all doctors wishing to practice must be registered by the Medical Council. Consultant ophthalmologists, ophthalmologists and community ophthalmic physicians are required to be registered on the Specialist Register of the Medical Council in either the Ophthalmology or Ophthalmic Surgery sections.

4.8.2 General Practitioners (GPs)

Similarly, under the Medical Practitioners Act 2007 all practising GPs should be registered with the Medical Council under the GP section.

4.8.3 Area Medical Officers (AMOs)

Under the Medical Practitioners Act 2007 all practising AMOs must also be registered with the Medical Council.

4.8.4 Orthoptists

At present, there is no formal registration process for orthoptists working in Ireland, with the majority of orthoptists voluntarily registering with the British and Irish Orthoptic Society. However, under the Health and Social Care Professionals Act 2005,[41] orthoptists are one of the designated professions which will be registered and regulated by the Health and Social Care Professionals Council (CORU). The Orthoptists Registration Board is expected to be appointed in 2016/2017 and will commence the formal registration of all practising orthoptists.

4.8.5 Optometrists and Dispensing Opticians

These professionals were previously registered by the Opticians Board but are now registered by CORU since late 2015 (Opticians Act 1956[42] and Health (Miscellaneous Provisions) Act 2014[43]).

4.8.6 Nurses including Public Health Nurses, School Public Health Nurses, Community Nurses and Ophthalmic Clinical Nurse Specialists

Under the Nurses and Midwives Act 2011,[44] the Nursing and Midwifery Board of Ireland (NMBI), formerly known as An Bord Altranais, maintains the register of all practising nurses and midwives.

4.9 Training for Professionals

4.9.1 Consultant Ophthalmologists

To be eligible for registration as an ophthalmic surgeon with the Medical Council, doctors must have undergone a minimum of 14 years' training, consisting of a five-year basic medical degree and one year at intern grade followed by specialist training, which is a minimum of three years on a basic specialist training programme and five years at higher surgical training grade followed by a subspecialist fellowship (1–2 years), as appropriate.

4.9.2 Ophthalmologists/Community Ophthalmic Physicians

To be eligible for registration as a medical ophthalmologist/community ophthalmic physicians with the Irish Medical Council, doctors must have undergone a minimum of 11-years training, consisting of a five-year basic medical degree and one year at intern grade followed by specialist training which is a minimum of three years on a basic specialist training programme followed by two years at registrar grade, and in addition many will undergo a subspecialist fellowship (1–2 years).

4.9.3 General Practitioners (GPs)

To be eligible for registration as a GP, a doctor must have undergone a five-year basic medical degree, one year at intern grade followed by specialist training, coordinated by the Irish College of General Practitioners (ICGP), for a minimum of four years.

4.9.4 Area Medical Officers (AMOs)

To be eligible for registration as an area medical doctor, a doctor must have undergone at least 11 years of training and experience. This includes a five-year basic medical degree, an intern year and, after obtaining full registration, complete at least five years' relevant satisfactory experience in the practice of the medical profession. Each doctor must have obtained a master's degree in Public Health or Child Health or equivalent; examples include memberships of faculties in the following areas: Paediatrics, Public Health, and General Practice, etc.

4.9.5 Orthoptists

Orthoptics is a three or four year BSc degree awarded by the Universities of Liverpool and Sheffield in England, and Glasgow Caledonian University in Scotland. There is no Orthoptics degree currently available at an Irish university. The course provides both theoretical teaching and clinical experience in approved hospitals. Orthoptists have access to training in hospital ophthalmology departments throughout the majority of their three-year course.

4.9.6 Optometrists

To be eligible for registration by CORU, optometrists must complete a four-year degree course at the Dublin Institute of Technology (DIT), Kevin Street, and pass the clinical exam of the Association of Optometrists of Ireland (AOI).

4.9.7 Dispensing Opticians

DIT provides a three-year BSc in Ophthalmic Dispensing. The current programme is the only one in Ireland and provides the training and education required by dispensing opticians for registration by CORU.

4.9.8 Public Health Nurses

To be eligible for registration as a public health nurse by the NMBI, registered general nurses with two-years' post-registration experience must complete a one-year third-level postgraduate higher diploma in public health nursing. This programme incorporates a child health module which, includes *BHfC*[3] training in theory and clinical practice placement. All PHN staff are provided with ongoing training in child health.

4.9.9 School Public Health Nurse

Some areas have dedicated SPHN posts, whereas other areas incorporate school vision screening service into the overall PHN role with training provided. SPHNs are registered PHNs having completed a third-level postgraduate higher diploma in PHN. In addition to *BHfC*[3] training, SPHNs are provided with specific training to facilitate vision screening for Junior Infants and 6th class vision screening.

4.9.10 Ophthalmic Clinical Nurse Specialists

Ophthalmic nurse specialists may have completed an optional postgraduate diploma in ophthalmic nursing that is run by the Faculty of Nursing and Midwifery, Royal College of Surgeons in Ireland, and the Nursing Department, Royal Victoria Eye and Ear Hospital.

4.10 Aids and Appliances

People with disabilities may be eligible for medical/surgical aids and appliances that facilitate and/or maintain mobility and/or functional independence. The HSE provides assistive devices to people with disabilities to enable them to maintain their health, optimise functional ability and to facilitate care in their primary care setting. Assistive devices such as medical/surgical aids and appliances are provided to individuals to:

- Retain, restore and promote maximum independence.
- Empower people to manage their own care to the best of their ability, i.e. to intervene no more than is absolutely necessary.
- Compensate for the absence of alternative support or complement existing supports.

Prioritisation is based on the results of the assessment, and a prioritisation process approves items which are essential to ensure safety, dignity and independence within available resources. All professionals providing community-based services, including occupational therapists, physiotherapists and public health nurses, will be aware of the prioritisation criteria for aids and appliances and will provide any necessary and urgent items of equipment following appropriate assessment as soon as possible to eligible persons, i.e. medical card or long-term illness card holders.

Funding for assistive technology aids and appliances for blind people is generally provided from the HSE Aids and Appliances budget and not through the Disability Programme. Some CHO areas have derived their own mechanism for funding items of assistive technology not available on the GMS through a budget held by the local disability manager or by a local ophthalmic budget. Funding is also provided to NCBI for a range of services, which includes a small allocation for assistive technology.

4.11 Existing Patient Journeys

4.11.1 Children

4.11.1.1 Newborn Infants

Babies' eyes are checked by the paediatric team prior to discharge from the maternity hospital (see Figure 4.1). If an abnormality is detected the baby is referred to a hospital consultant ophthalmologist. The maternity hospital sends a discharge summary to refer the baby to the PHN service for a neonatal visit. The discharge summary includes an eye examination section. Babies born at home also have checks with the paediatric team. There are no standardised templates used across maternity hospital sites or HSE files to structure and record the eye examination.

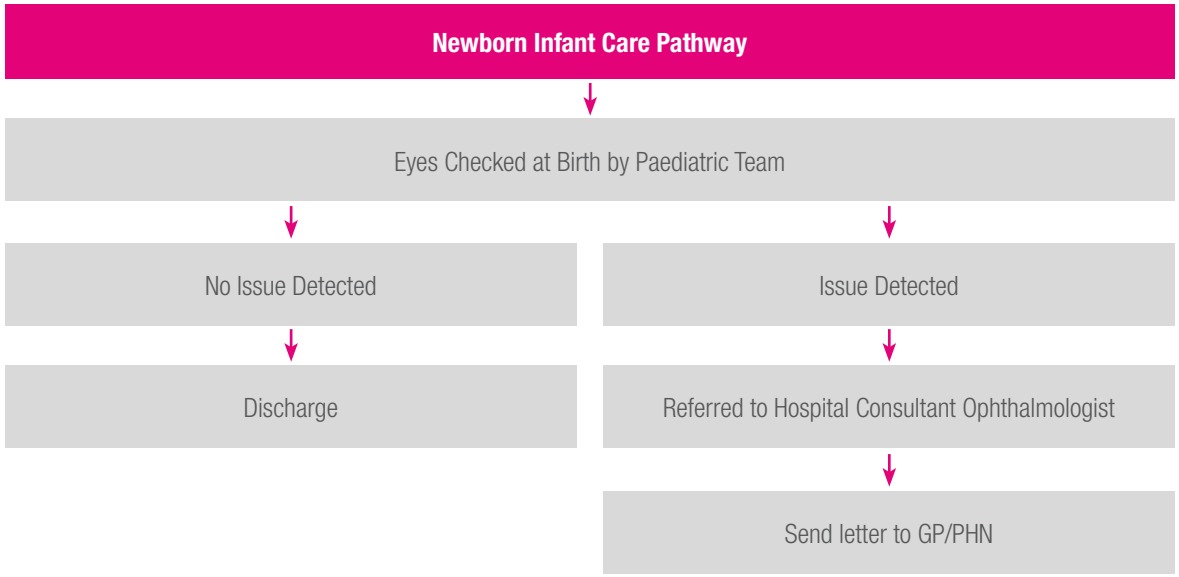


Figure 4.1: Existing newborn infant care pathway

4.11.1.2 Public Health Nurse Neonatal First Visit

The PHN neonatal first visit and assessment is carried out between 24 and 72 hours post-hospital discharge. This assessment includes observation and inspection of the eyes and corneal light reflex. The assessment also reviews family and birth history, parental concerns and visual behaviour in line with *BHfC*[3]. If an issue is detected, the PHN will refer the baby to their GP.

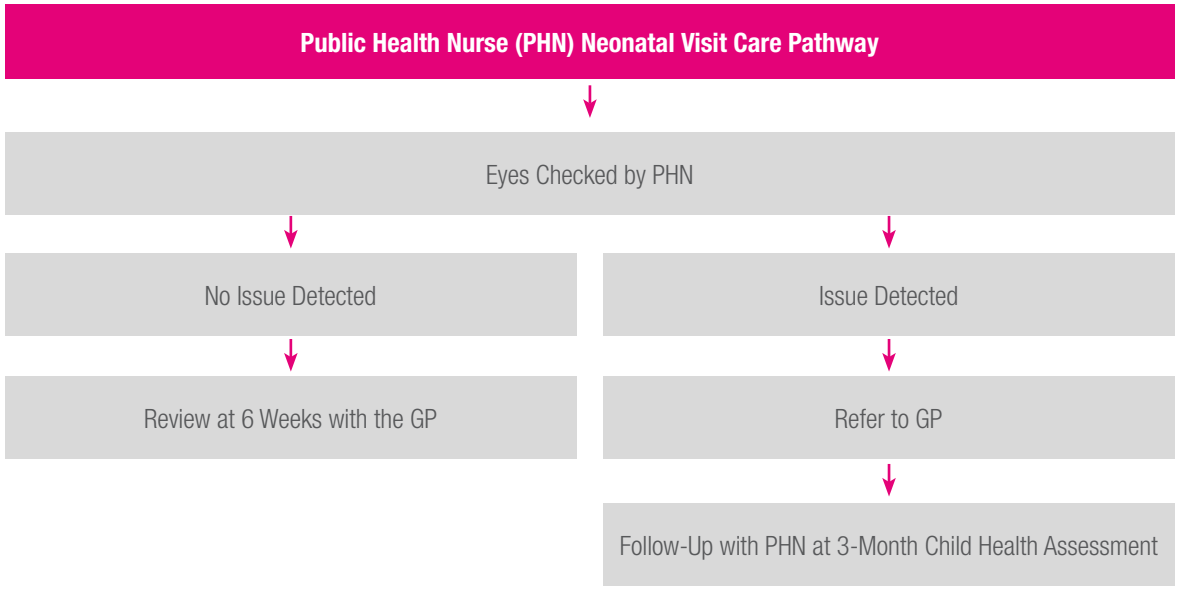


Figure 4.2: Existing public health nurse neonatal home visit care pathway

4.11.1.3 2-Week Check

The 2-week check is completed by GPs under the Mother and Infant Contract (see Figure 4.3). It should be noted that this timeframe does not apply to babies born prematurely. If an abnormality of the eyes is detected the baby is referred to a community ophthalmic physician. There are no standardised templates used by GPs to structure and record the eye examination and there is no standardised referral template across the country.

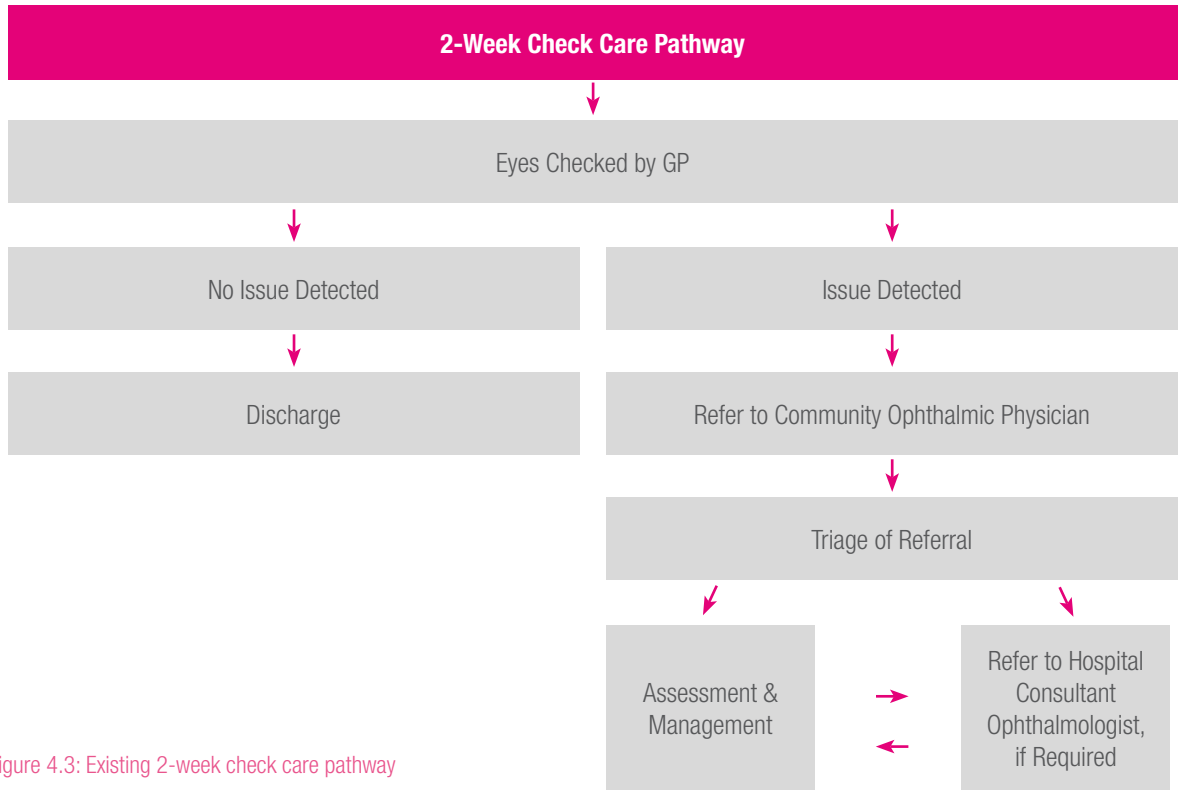


Figure 4.3: Existing 2-week check care pathway

4.11.1.4 6-8 Week Check

The 6-8 week check is completed by GPs under the Mother & Infant Contract. If an abnormality of the eyes is detected the baby is referred to hospital or to a community ophthalmic physician. There are no standardised templates used by GPs to structure and record the eye examination and there is no standardised referral template from across the country.

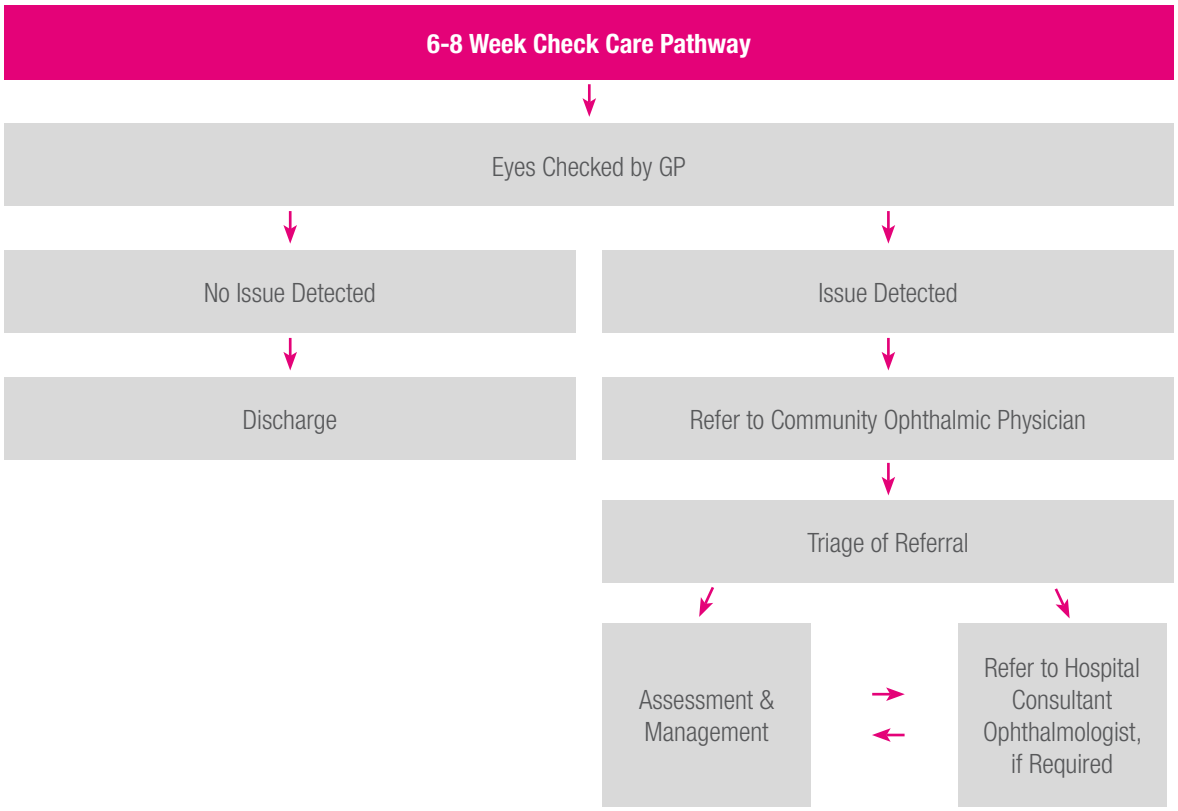


Figure 4.4: Existing 6-8-week check care pathway

4.11.1.5 Preschool Surveillance/Assessment

Surveillance, as per *BHfC*, is provided by PHNs at four intervals for children aged between 3 months and 3.5 years (the 7–9 month check may be AMO or PHN led). At the 3-month check (see Figure 4.5) a PHN verifies that the eyes are aligned, looks for any structural abnormality/abnormal appearance of the eyes/eye movement and enquires if there is a family history of strabismus or amblyopia in a first-degree relative and if the parent is concerned about same. Referral rates from surveillance vary considerably, most likely due to lack of specificity and interpretation of the referral criteria. This referral variance creates large inefficiencies in the eye care services, which are already under-resourced to deal with projected referrals according to good practice. As with other developmental checks, there is no standardised recording system across the country that is integrated with a patient management system for the patient, in these cases, children.

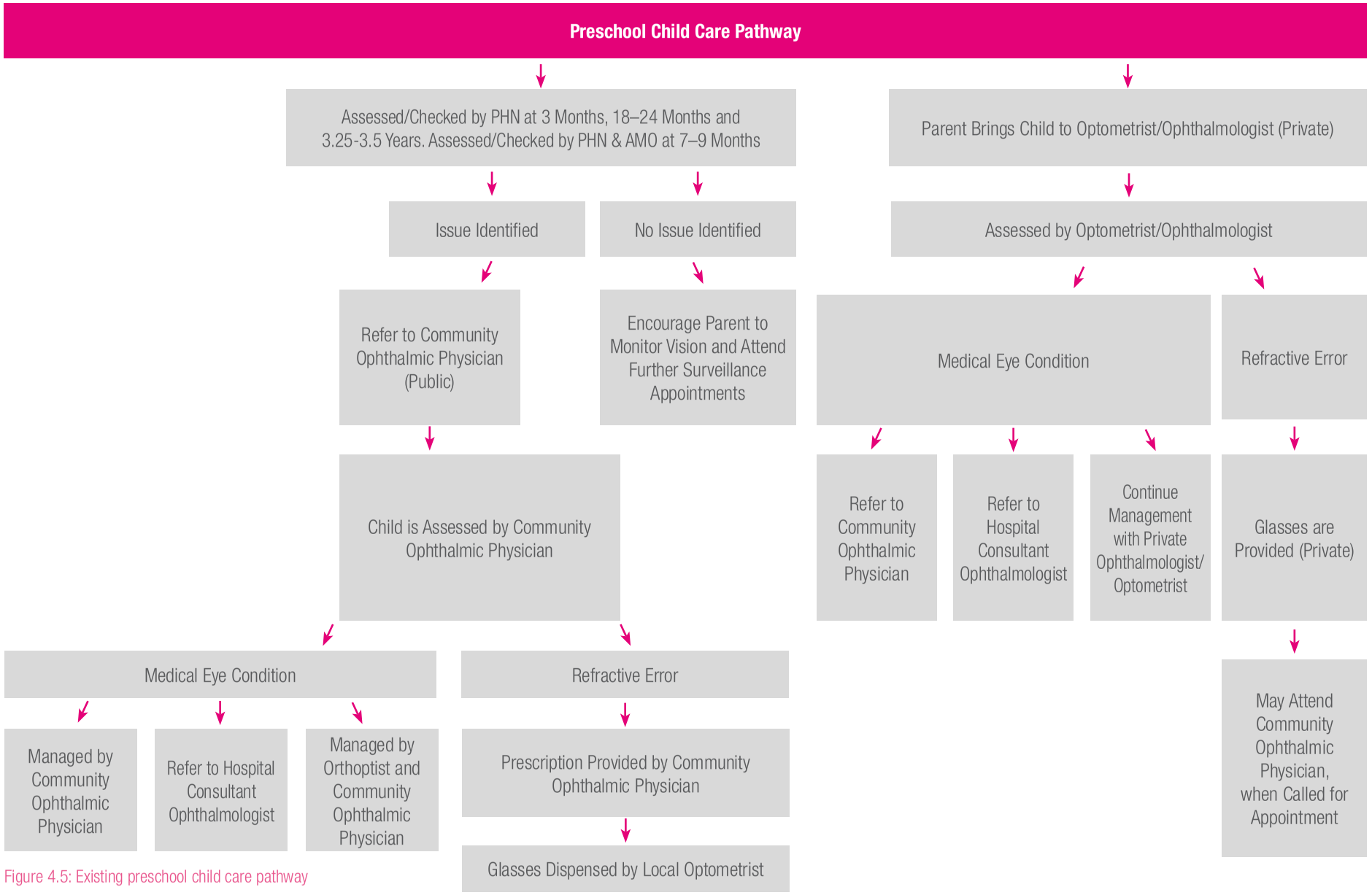


Figure 4.5: Existing preschool child care pathway

4.11.1.6 School Vision Screening

Children are screened by PHNs within the school setting when they are in Junior or Senior Infants (see Figure 4.6). Referral rates from school vision screening to the community ophthalmic service are very high in some parts of the country. This is perhaps due to the limited provision of training to PHNs in school vision screening and the absence of adequate governance and analysis.

Currently, community ophthalmic physicians see all children referred from school vision screening aged up to 12 years of age (or while still attending primary school). It is acknowledged that a large proportion of their management could be provided by other eye care professionals. Children remain on the community ophthalmic physicians' caseloads while still attending primary school or being taught at home at primary school level of age due to their eligibility as defined under the Health Act 1970. Some children experience delays in their care pathway as their referral may first be processed by a PHN and then by an AMO. As some areas have no community ophthalmic physicians, e.g. South Dublin, children in these areas are often referred to their general practitioner when an issue is identified and then onward to a hospital setting. Such referrals are, unfortunately, very common and are an inefficient and inappropriate use of GP & hospital resources. The absence of a community ophthalmic physician service and supporting team results in GP referrals creating hospital waiting lists for basic eye services that could and should be provided in a primary care setting.

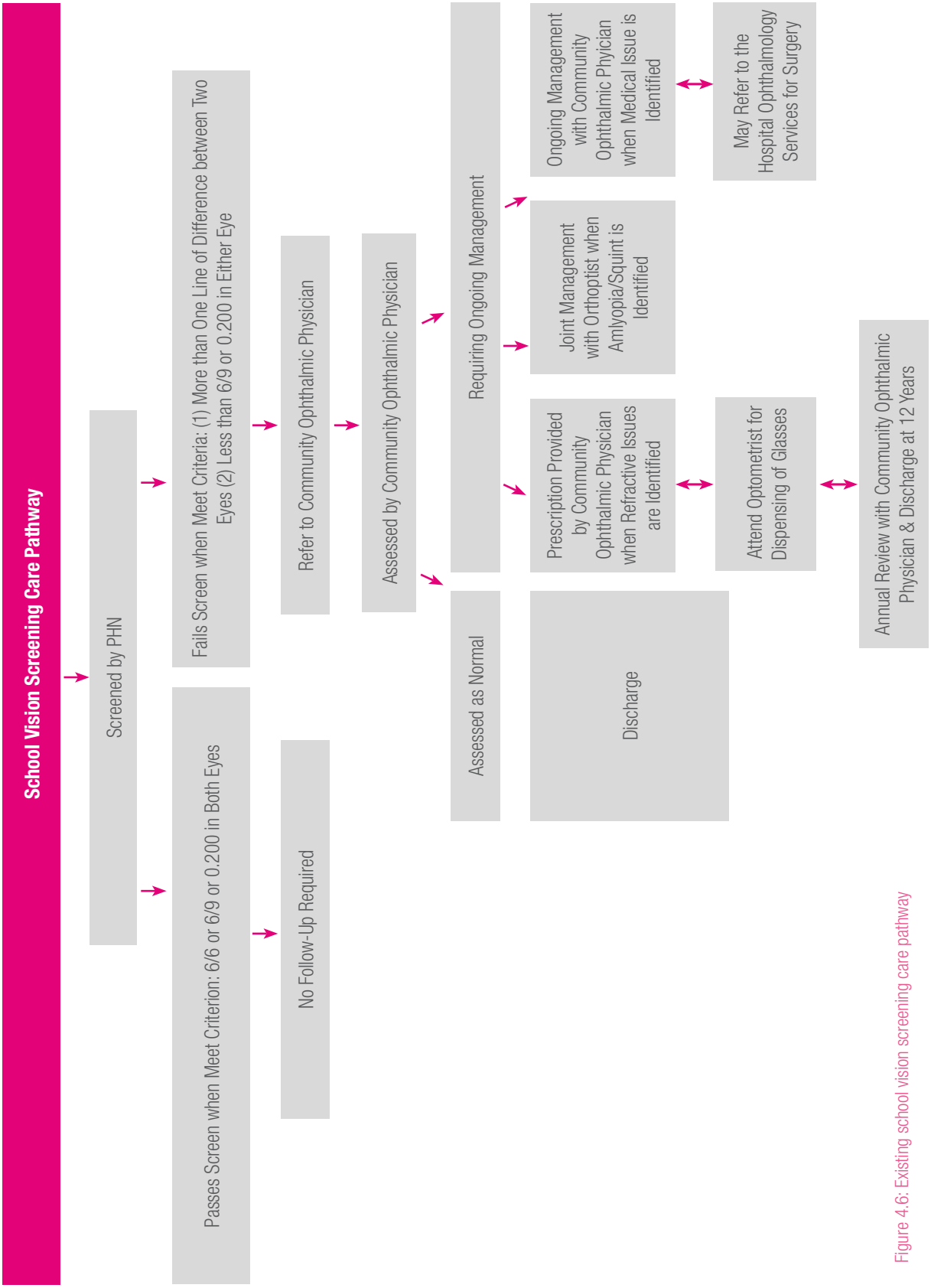


Figure 4.6: Existing school vision screening care pathway

4.11.1.7 School Exit/6th Class Vision Screening – 12 Years

Children who are referred to the community ophthalmic physician following school vision screening continue as patients of the service until they leave school (see Figure 4.7). Other children who have a visual issue may first present privately to an optometrist or to a consultant ophthalmic surgeon for assessment and management. This may be due to patient choice or due to excessive public waiting times.

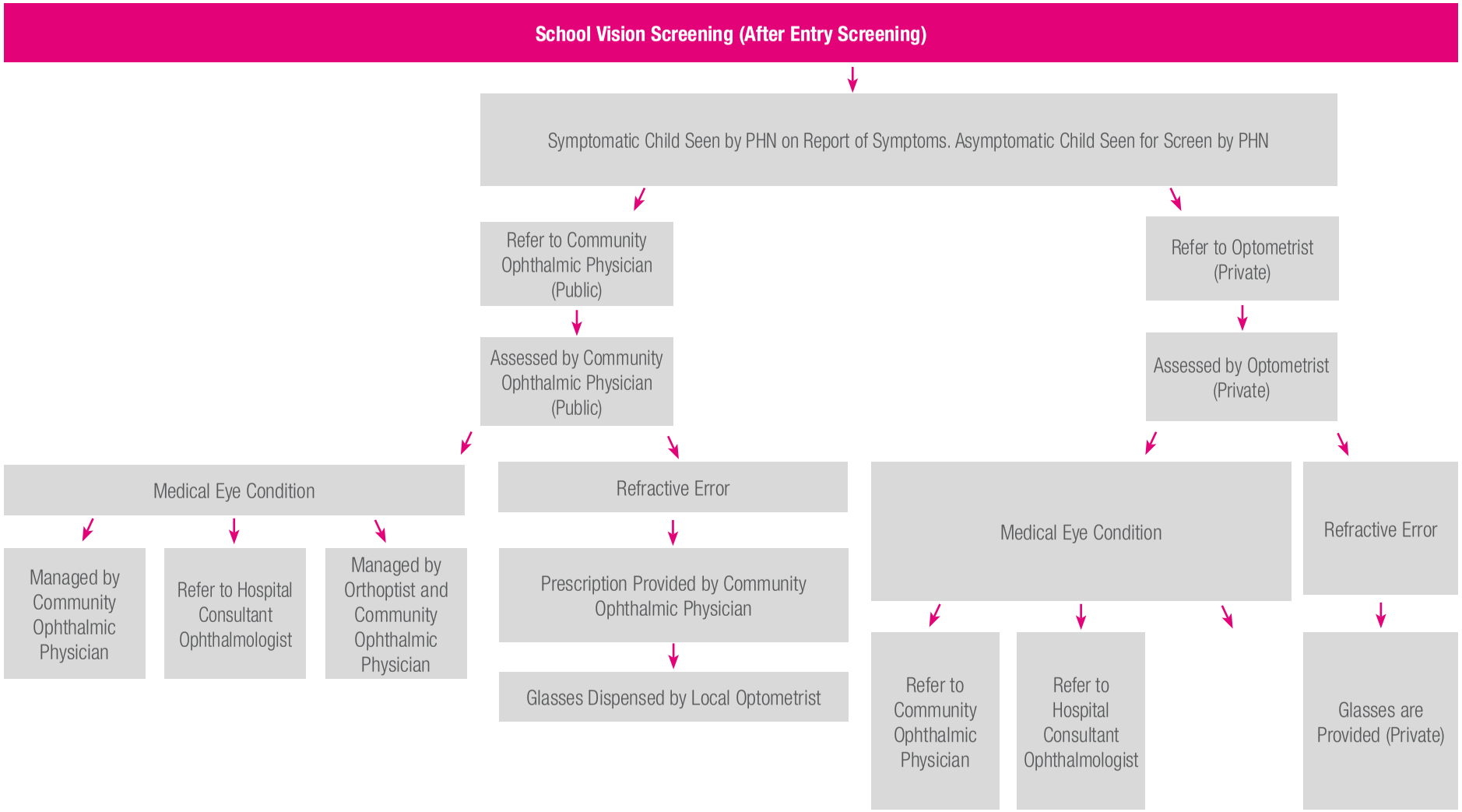


Figure 4.7: Existing school vision screening (after entry screening) care pathway

4.11.1.8 Screening for Colour Blindness

Prior to the PCESRG children were screened in 6th class for colour blindness (see Figure 4.8). Approximately 5% of boys screened will present with some form of colour blindness,[45] colour blindness defects are unusual in girls and are referred on to the community ophthalmic physician. Children were advised as to how colour blindness may impact on potential occupational decisions or everyday life. One of the first actions undertaken by the PCESRG was to discontinue 6th class screening, as school vision screening focuses on detecting amblyopia and should be completed in Junior Infants and colour vision screening does not adequately fulfil screening criteria proposed by international experts. Colour blindness screening has now ceased in schools with consequent more efficient use of screening resources.

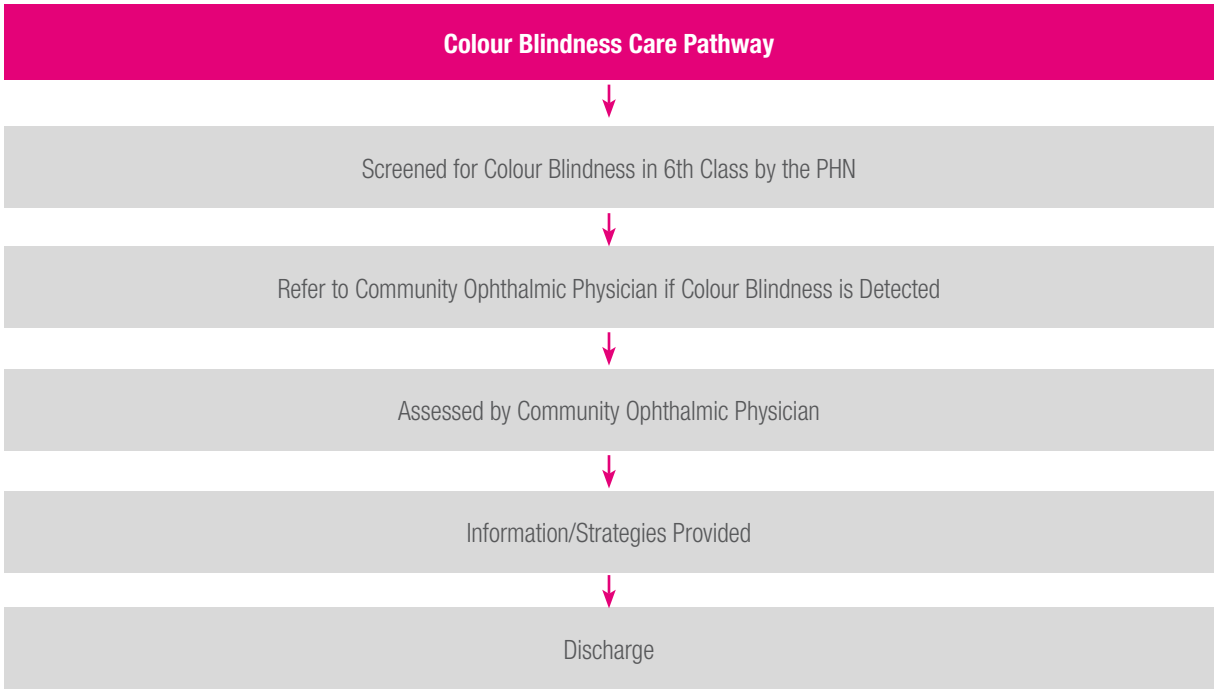


Figure 4.8: Existing colour blindness care pathway

4.11.1.9 12-16 Year Olds

Children with medical cards or those who were initially referred to the community service following school vision screening continue to attend the community ophthalmic physician after they leave primary school. All other children aged between 12 and 16 years attend a hospital ophthalmologist or a private ophthalmologist/optometrist for assessment and management. Many of these new referrals for this age cohort as evidenced via the work of the PCESRG are related to minor conditions that could and should be addressed in a primary care eye service.

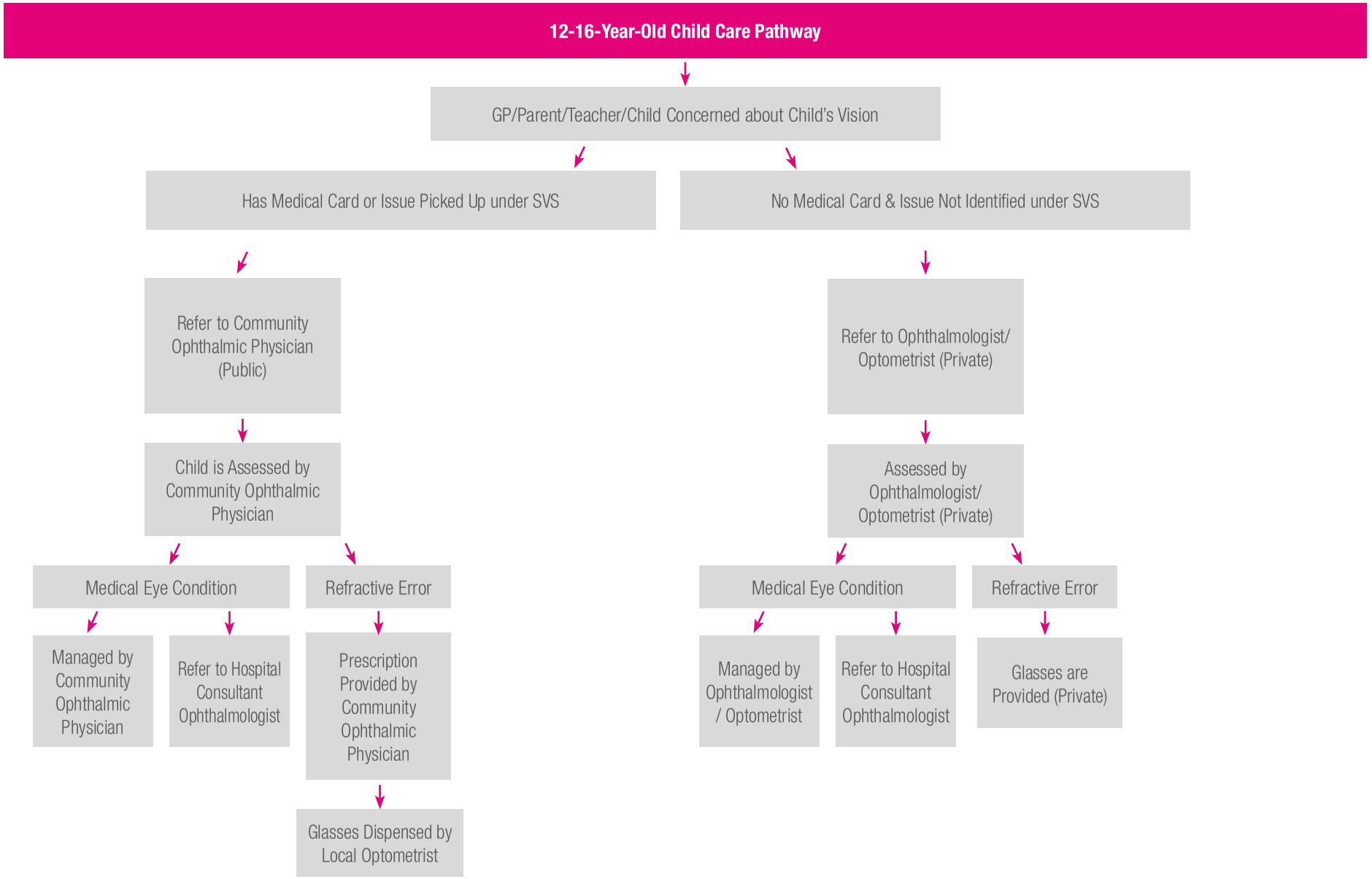


Figure 4.9: Existing 12-16 year-old child care pathway

4.11.1.10 Eye Injury

Children and adults with an eye injury generally present to their GP or local emergency department (ED) (see Figure 4.10). GPs may refer the patient to a community ophthalmic physician or general/eye emergency department. The patient will not be liable to pay the ED charge, currently at €100 if referred in by their GP. If a patient attends an optometrist first and receives a referral from the optometrist for their local ED, the patient will be liable to pay the ED charge. Community ophthalmic physicians and/or EDs frequently manage emergency phone calls from GPs.

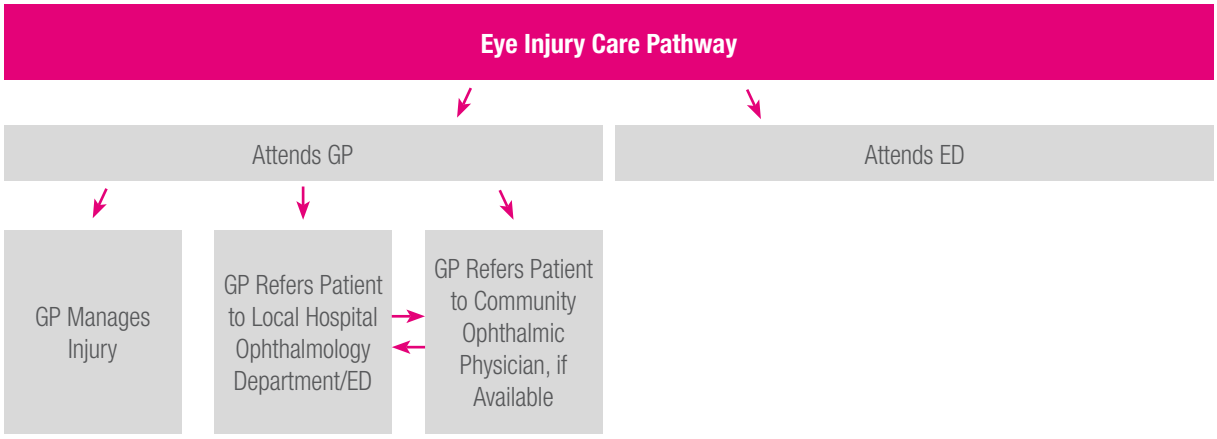


Figure 4.10: Existing eye injury care pathway

4.11.2 Adults

4.11.2.1 Age-Related Macular Degeneration

The current management of age-related macular degeneration is provided in the acute care setting (see Figure 4.11). Much of the care for these patients could be provided in the primary care setting if appropriately trained staff and adequate facilities were made available and if there were good integration between the acute hospitals and primary care eye services so that patients could be easily transferred between the hospital and the community should their care require it.

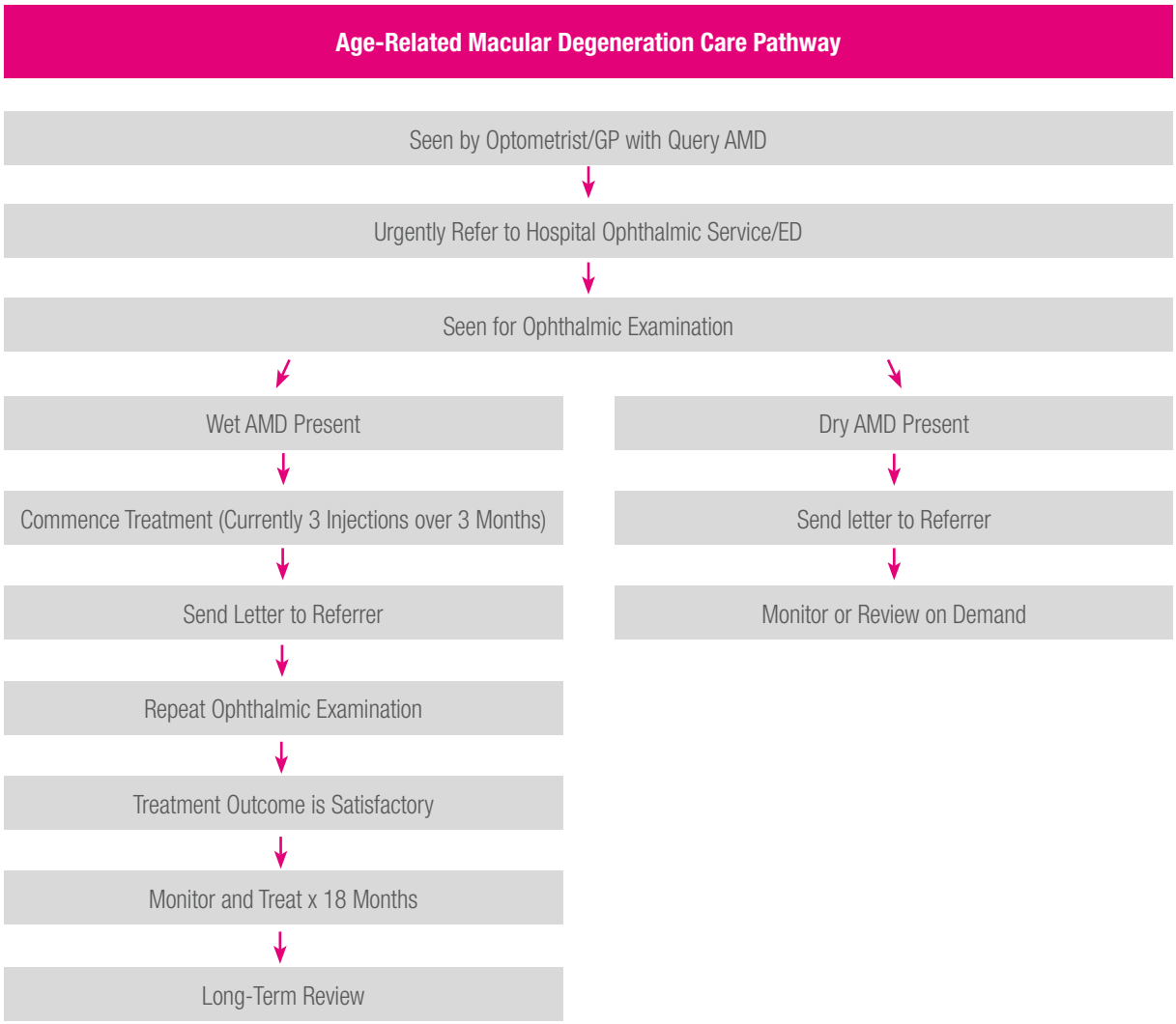


Figure 4.11: Existing age-related macular degeneration care pathway

4.11.2.3 Cataract

Cataract surgery is performed in the acute care setting (see Figure 4.12). Approximately 12,000 cataract-related surgeries were completed by publicly funded hospitals in 2011. Preoperative and postoperative assessments are also carried out in the acute setting. However, some of this care is carried out by community ophthalmic physicians who waitlist patients directly for surgery. Patients are referred to their local optometrists for glasses 6 weeks post-surgery. Preoperative and postoperative assessments could be routinely provided in the primary care setting once appropriately trained staff and adequate facilities are made available.

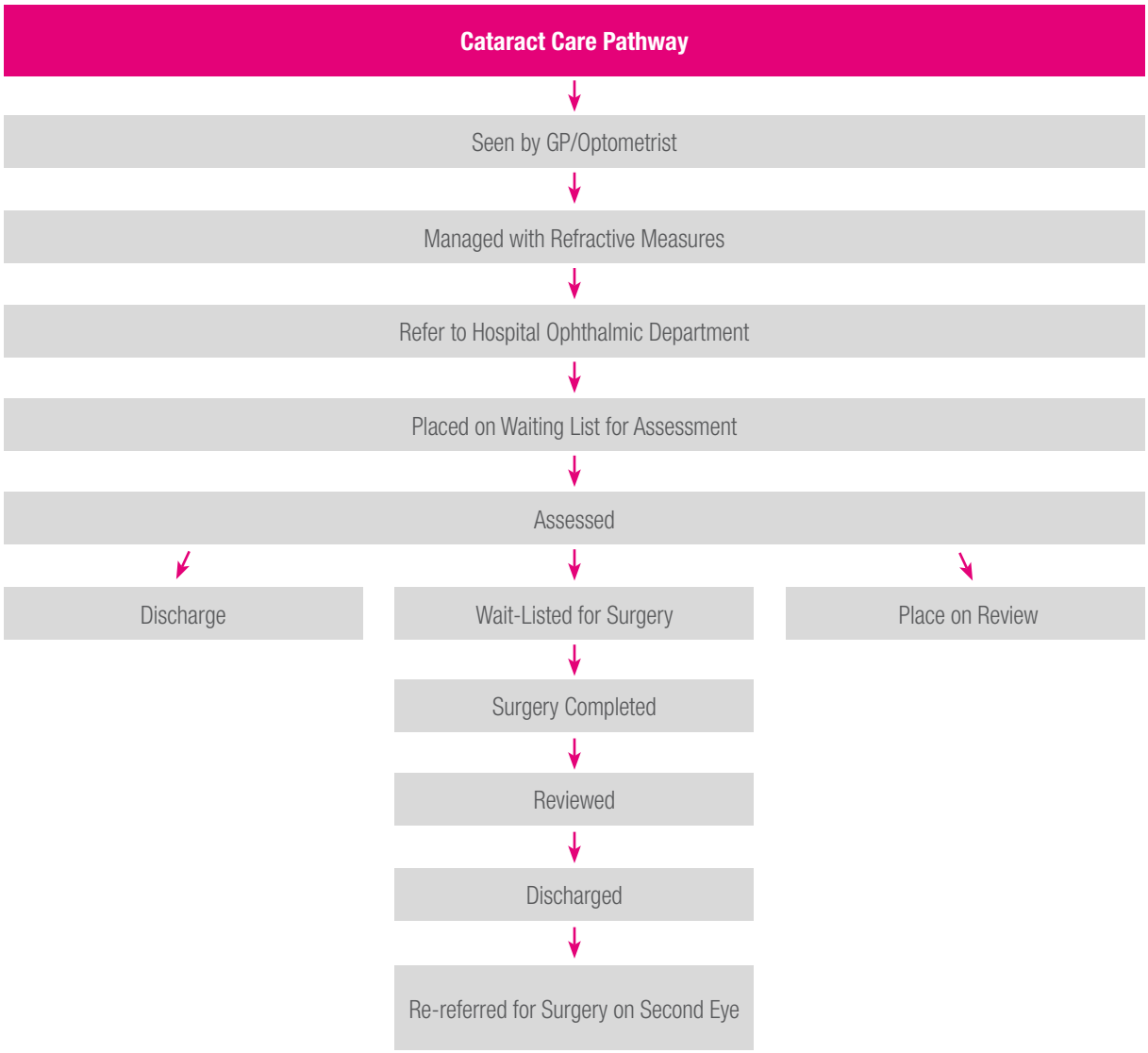


Figure 4.12: Existing cataract care pathway

A pilot scheme, devised by Sligo University Hospital and the Association of Optometrists Ireland (AOI), in response to the growing waiting lists for cataract surgery, commenced in August 2013. The aim of the pilot was to ensure that patients whose surgery has been uncomplicated and who had no significant ocular comorbidity would be eligible for same day discharge to community optometrists. To participate in the pilot, local optometry practices were required to meet a set of protocols for equipment and training. Optometrists from these practices attended information sessions outlining the patient pathway, completion of the Medisoft electronic patient record (EPR), identification of postoperative complications and procedures for re-referring patients with postoperative complications as well as patients requesting second eye cataract surgery. The pilot is progressing well and there are currently 58 optometrists participating in it across the North West. The results of this initiative will inform future service provision in relation to cataract management and possibly other conditions.

4.11.2.4 Glaucoma

Glaucoma management is conducted by community ophthalmic physicians in the community setting and by consultant ophthalmologists in the acute setting (see Figure 4.13). The PCESRG estimates that approximately 25,000 adults in Ireland currently experience some form of glaucoma. Many patients with glaucoma continue to attend hospital OPD services when they could be seen in primary care if appropriately trained staff and adequate facilities were available. Patients who require drainage surgery or trabeculoplasty are referred to specialist glaucoma surgeons in the acute regional eye units.

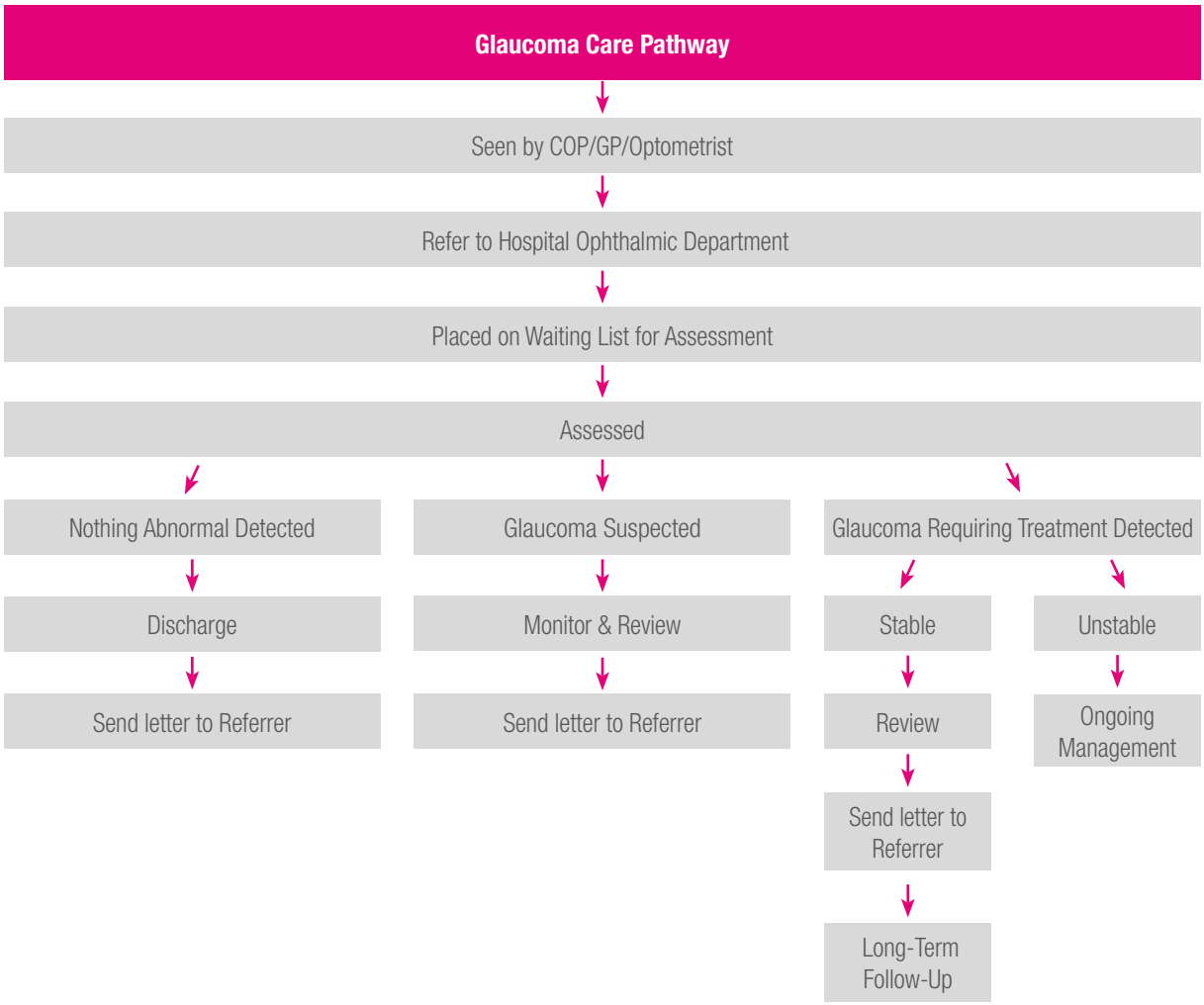


Figure 4.13: Existing glaucoma care pathway


Y O E L K S F D I
O X P H B Z D

5.0 USER AND PROVIDER PERSPECTIVES – STAKEHOLDER CONSULTATION

5.1 Introduction

It was determined that the views of stakeholders would be critical in establishing the issues existing in the current services and also in identifying what the service should look like and how it should operate in the future. An extensive consultation exercise was designed for this purpose. The multi-methodology consultation exercise undertaken by the PCESRG is considered by the HSE to be best practice. Consultation with parents, adult users, professionals, professional groups and potentially affected parties was considered to be an essential part of the work of the PCESRG.

What is set out below are the methods employed, who was consulted and the key findings that emerged as a result of the extensive consultation exercise. **It should be noted that the information provided below was written and/or provided by stakeholders for inclusion in this report; therefore, not all comments reflect the views of the PCESRG.**

5.2 Methodology

The PCESRG identified the following stakeholders for consultation:

- Parents of child service users
- Adult service users
- Professionals
- Professional groups
- External stakeholders

A range of consultative methodologies were employed. These included an eye services survey, invitation to community and hospital staff to provide feedback, review of feedback collated by the HSE's Advocacy Unit and an extensive consultation process with professional groups and external stakeholders.

5.3 Eye Services Survey

A researcher, funded by the Irish College of Ophthalmologists, attended a number of acute care and primary care eye services sites across the country in the four former HSE administrative areas during March/April 2015 to distribute and collate the eye services survey.

The survey (see Appendix 1) was aimed at adult service users and parents of children attending the eye clinics in the eight sites on the day that the researcher was present. The sites that were included in the survey are as follows:

HSE Dublin North East:

- Temple Street Children's University Hospital (Acute)
- Ashgrove House (Community)

HSE Dublin Mid Leinster

- Our Lady's Children's Hospital, Crumlin (Acute)
- Midland Regional Hospital Portlaoise (Community)

HSE South

- University Hospital Waterford (Acute)
- Community Care Centre, Cork Road, Waterford (Community)

HSE West

- University Hospital Limerick (Acute)
- HSE Primary Community Care Centre, Ballynanty, Limerick (Community)

5.3.1 Key Findings from the Eye Services Survey

There were 74 returns in total; 52 of the responses related to paediatric services and 22 related to adult services. The following were the main themes noted across the four open-ended questions that were asked:

1. **What worked well today?**
   - 11% of those who responded reported that staff were friendly.
   - 16% felt that staff had good clinical skills.
   - 50% of respondents reported a short waiting time for their appointment once they arrived at the clinic.
   - Other responses included: the reception staff were helpful; the clinic was run well; and appointments times were offered that suited the patient/child.

2. **What could have been done better?**
   - 30% of respondents requested that waiting times for appointments be shorter.
   - 10% requested the provision of more information on diagnosis, waiting times, treatment etc.
   - 8% requested the provision of toys for children in the waiting areas.
   - Other responses included: there is a need for improved facilities such as waiting areas/toilets; there is a need for improved signage to find the clinic and waiting area; and there is a need to inform parents of the result of school vision screening.

3. **What should always be done to lead to a better service?**
   - 20% of respondents requested that more staff be employed.
   - 18% requested that clinic times be scheduled better to prevent excessive waits for patients/children on the day of their appointment.
   - 16% requested that waiting times for appointments be shorter.
   - 12% requested the provision of more information on diagnosis, waiting times, treatment, etc.
   - Other responses included: there is a need for better communication between the HSE and schools regarding the results of school vision screening; and the clinic area was noisy.

4. **Do you have any other comments?**
   - 76% of respondents had no further comments to add.
   - 10% stated that the waiting times to be seen are long.
   - Other responses included: it is difficult to wait a long time with small children; it is difficult to park near the clinic; there is a need for more doctors, some patients/parents of children had to pay for private treatment while waiting for a public service; and additional time should be allowed for children with special needs.

5.4 Invitation to Community and Hospital Staff to Provide Feedback

A memorandum was issued by Mr Brian Murphy, Chair of the PCESRG, to each integrated service area (ISA) manager on the 9 December 2014 (see Appendix 2). It gave an overview of the review and consultation process and requested each ISA manager to inform relevant staff of the review and to collate any feedback on eye services for return by Friday, 16th January 2015. A similar memorandum was also issued by the chair to the Acute Hospitals Division (see Appendix 3) requesting it to inform all relevant staff in acute hospital services of the review and to collate any feedback on eye services for return by Friday, 16 January 2015.

5.4.1 Key Findings from the Community and Hospital Staff Feedback

Two submissions were received from staff working within primary care eye services and contained the following feedback:

- A review of primary care eye services is welcomed.
- It is essential that the service is adequately resourced to provide an equitable service for all patients nationally.
- Statistics should correlate with pathology and reflect population needs.
- Relevant key performance indicators are required.
- Regular revalidation of waiting lists may also help in reducing unnecessary visits.
- The challenges experienced in Dublin are equally pressing for the full country due to present demand not being met.
- The introduction of secondary screening by orthoptists in primary care centres should have a good effect in reducing numbers of false positive referrals by PHNs in the infant group (currently running at up to 70%). The possible use of photoscreeners by orthoptists could lead to time efficiencies. (A photoscreener is a device that captures two 'red reflex' images of a child's eye. A 'normal' red reflex means light is passing the eyes normally and focusing on the retina in a way that creates symmetrical images – oftentimes a reddish colour in both eyes. Red reflex images that are asymmetrical, have dark spots, display a white-coloured crescent-shaped reflex, or do not create a red reflex at all can be indications of various eye abnormalities.) The secondary screening by orthoptists could take place outside of the eye clinic and in the community.
- All children referred to the Specialist Eye Clinic must be seen by an ophthalmologist for refraction and dilated fundus check.
- Early discharge of certain children to an optometrist, e.g. children with myopia - could have follow-up appointments with an optometrist. A scheme could be devised whereby the children could get examinations by the optometrist for the cases that do not require the expertise of an ophthalmologist.
- A system to manage non-attendance (averaging up to 30% in some eye clinics should be introduced;) - possibly by texting patients before appointments. Some form of fine payment for no-shows is another possibility.
- Modern data systems at the clinics would streamline work for 5 administration staff.

5.5 Review of Feedback Collated by the HSE's Advocacy Unit

The HSE's Advocacy Unit provided to the PCESRG all the historical feedback on eye care services received by its office from January 2014 - March 2015 via the patient feedback mechanisms of 'Your Service, Your Say' (formal HSE feedback mechanism), emails, letters, phone calls and complaints.

5.5.1 Key Findings from the Feedback Collated by the HSE's Advocacy Unit

Feedback consisted of 11 emails sent to the unit in 2014 and the first quarter of 2015. The following is a summary of the feedback:

- There are long waiting lists for eye care services.
- There are long wait times at clinics on the day of appointment.
- Poor information is available from the clinic or HSE website regarding eye care services, conditions and eligibility.
- Poor feedback is provided to parents on the outcome of school vision screening.
- There is no financial reimbursement for parents who bring their child to private optometrists due to the long waiting lists at the community eye care clinics.

5.6 Consultation with Professional and Representative Groups and External Stakeholders

The PCESRG communicated with professional groups whose members have specific roles or interest in primary care eye services. They were invited to attend an individual consultation session and/or provide a written submission. The focus of their feedback was to raise any issues that they felt should be considered in line with the terms of reference of the PCESRG. They were also invited to review the first draft of the PCESRG report to ensure that it reflected their

contributions accurately. Written summary submissions and full submissions are provided in Appendices 4-17.
The professional groups who contributed to the PCESRG included:

1. Association of Optometrists Ireland
2. Federation of Ophthalmic and Dispensing Opticians Ireland
3. HSE Office of Nursing and Midwifery Services/Directors of Public Health Nursing
4. Irish Association of Dispensing Opticians
5. Irish College of General Practitioners
6. Irish College of Ophthalmologists
7. Irish Hospital Consultants Association
8. Irish Medical Organisation

The external stakeholders who contributed to the PCESRG were:

1. ChildVision
2. CORU
3. Department of Education and Skills – Visiting Teacher for Visual Impairment Service
4. Fighting Blindness
5. Irish Guide Dogs for the Blind
6. National Coalition for Vision Health
7. National Council for the Blind Ireland
8. Disability Unit, Department of Health

5.6.1 Key Themes from the Consultation with Professional and Representative Groups and External Stakeholders

1. Blindness and visual impairment represent a significant burden to society; the cost in terms of loss of quality of life, lost productivity, rehabilitation and education are high and increasing.
2. Current waiting lists for eye care are too high and the situation is deteriorating.
3. The availability of services and referral policies vary nationwide.
4. There is a need for clinical governance, defined care pathways and the provision of additional resources for required diagnostic equipment and facilities.
5. The scope of practice and skills of optometrists exceed the level supported under current contractual arrangements for medical card holders and there are too few optometrists working within the public health system.
6. Additional community ophthalmic physicians and orthoptists are required in the primary care setting.
7. Not all eye care can be delivered in HSE primary care settings. Therefore, there needs to be good integration with the relevant acute care settings, local optometrists and GPs.
8. Communication between all providers of eye services needs to be improved to ensure safe and effective care.
9. ICT systems are fundamental to the development of integrated services, including electronic referrals. Imaging and other diagnostics are central to ophthalmic practice and lend themselves to electronic storage and transmission. Software packages are available that can provide a clinical patient management system for ophthalmology.
10. The application system for children and adults to attend their local optometrist/ophthalmologist should be centralised and processed online. Currently, paper applications are used and they have to be sent through the post or presented to the optical section of the local health centre.
11. The HSE claim form has a unique claim number, the payment number when received by the optometrist/ophthalmologist may not correlate to the claim number or authorisation number; therefore, reconciliation of claims to payments is difficult.
12. Children under 8 years should attend an ophthalmic clinic at least initially, but could then be referred on to and managed by their local optometrist.

13. There is no standardised approach to the provision of more specialised lenses.
14. There are too many false positive referrals from surveillance and screening. A standardised approach with regular screener training and audit is required. There is a need to educate parents about the school vision screening programme. The ophthalmic team should communicate outcomes of assessments to the PHNs.
15. There is no standardised policy in place for transferring a child from a paediatric eye service to an adult eye service.
16. The COSMTS (pilot) allows contracted doctors to provide enhanced medical treatment to medical card holders. Despite Ministerial approval for its expansion, COSMTS has never been 'rolled out' beyond the pilot practices in six areas.
17. More information on maintaining eye health and on what eye care services are available needs to be provided to the public.

5.7 Summary of Key Findings from the Consultation Process

The PCESRG greatly appreciated the valuable and incisive feedback that it received from parents of children and adults accessing eye services, from the HSE's Advocacy Unit, professional groups, external stakeholders and staff. The feedback contributed enormously to a greater understanding of the strengths and weaknesses of the services and how best to shape future services to optimally meet the existing and emerging patient needs. The following summarise the main issues that were identified:

- Waiting times for services are very lengthy and unacceptable.
- There are inadequate staffing levels to meet service needs.
- The standard of accommodation, facilities and equipment is generally inadequate.
- There is evidence of inconsistent provision of information on eye care, prevention, diagnosis, treatment and services available.
- The absence of an electronic patient management system to monitor waiting lists and improve attendance rates, to provide data for KPIs and to enhance communication between the community service, the acute service, PHNs, GPs and local optometrists all contribute to poor performance management and avoidable inefficiencies.
- There is a major opportunity to increase the role for optometry within the HSE clinics and to work more closely with local commercial optometrists and dispensing opticians.
- There are inconsistent services available across the country with no standardised care pathways.
- HSE approval processes for patients to access local optometry services or aids/appliances are cumbersome.
- There is an opportunity to provide updated training to PHNs on vision screening and surveillance and to develop standard operating procedures.
- There is a need to review and update the COSS and COSMTS (pilot).

	Recurring Themes	Children/ Parents/ Adults	Professional Groups	External Stakeholders	Staff
1	Long waiting lists	✓	✓	✓	✓
2	Too few staff	✓	✓	✓	✓
3	Poor equipment & facilities	✓	✓	✓	✓
4	Inconsistent information provided on eye care, prevention, diagnosis, treatment and services available	✓	✓	✓	✓
5	No patient management system to manage waiting lists & DNAs, to provide KPIs and to enhance communication between the community service, the acute service, PHNs, GPs and local optometrists	✓	✓	✓	✓
6	Opportunity to increase the role for optometry within the HSE clinics and in close working with local optometry practices		✓	✓	✓
7	Variable services available with no standardised care pathways		✓	✓	✓
8	Cumbersome HSE approval process for patients to access local optometry services or aid/ appliances		✓	✓	
9	Opportunity to provide consistent training to PHNs on vision screening and surveillance and to develop standard operating procedures		✓	✓	✓
10	Opportunity to review and update the COSS and COSMTS		✓	✓	✓

Table 5.1 Summary of themes from the consultation process

6.0 BLUEPRINT FOR THE FUTURE PROVISION OF PRIMARY EYE CARE SERVICES

6.1 Introduction

Having documented the existing primary care eye services and identified strengths and weaknesses, established the services required to meet population needs, reviewed international and local best practice and learned from the extensive consultation process, the PCESRG has formulated a blueprint for the future provision of primary care eye services.

The aim of this chapter is to describe the blueprint for the future model of primary eye care services, setting out how the service will work, who will provide the services, where they will be provided and how they will be governed. The PCESRG determined that there is a clear need to move from an overreliance on community ophthalmic physicians managing all referrals to a new model centred on a primary care eye services team with multidisciplinary members. This team will be based in a primary care location with optimum accommodation, facilities, equipment and resources. This team will provide services along care pathways, as determined by the PCESRG in this report, in keeping with high quality standards, to both children and adults. The team will work in a highly integrated fashion, supported by an IT patient management system. The team will be called the Primary Care Eye Team (PCET) and will comprise of the following multidisciplinary team (MDT) members; community ophthalmic physicians, orthoptists, optometrists, nurses (with specialist training in ophthalmic care), technicians and administration staff. A Community Ophthalmic Physician Lead will provide leadership and clinical governance for the team.

The PCET will liaise closely with local optometrists to agree referral criteria for patients to be referred from local optometry to the PCET and to handover the care of patients from the PCET to the local optometry service when appropriate. The PCET will also liaise closely with the local hospital ophthalmic services to ensure that all patients are managed within the most appropriate clinical service and location.

The PCESRG, as borne out by the costed estimates, recommends that members of the PCET are directly employed by the HSE. However, a CHO Chief Officer may opt for public-private arrangements to establish the service in their relevant CHO area.

In order to achieve the recommendations outlined in this report new revenue funding of **€23,188,000** is required. This funding will cover the cost of establishing the PCETs across the CHOs and new contractual arrangements with ophthalmologist, optometrists and dispensing opticians and the planned increased service provision, including the shifting of a considerable volume of work from acute hospitals in relation to GMS patients.

6.2 Primary Care Eye Teams (PCETs)

Ideally, throughout the implementation process, each CHO will establish one PCET at a primary eye care service centre of excellence. This PCET will have highly skilled staff and high-end medical equipment for the provision of primary care eye services. The PCET at the centre of excellence will manage all primary care eye requirements for children and adults within that CHO. It is preferable to have one centre of excellence per CHO, where staff can work together and access appropriate equipment as opposed to providing several outreach clinics where staff would be working alone in substandard conditions. Some limited outreach may be provided at other locations due to local population distributions, geographical challenges or the need to increase attendances for newly referred children from school vision screening. Flexibility will also be required among CHOs to allow children/adults to cross CHO boundaries to attend their nearest PCET. In rare or exceptional circumstances, where access due to geographical situations is a challenge, the CHO may develop a second PCET. The PCETs will work closely with their local hospital/hospital group, GPs and optometrists to

ensure the provision of an integrated service to children and adults in relation to referrals from screening programmes, AMD, cataract, glaucoma and surgical/treatment procedures. Following the establishment of the PCETs there will be opportunities for hospital consultant ophthalmologists to attend specialist clinics in the PCETs and for community ophthalmic physicians to attend clinics run by the hospital setting to promote integrated care provision. The provision of some outreach services may be facilitated by telemedicine. Such cross-service engagement will only be possible post-establishment of the PCETs and strong links with acute services by each PCET will be necessary.

6.2.1 Staffing

The PCET will comprise community ophthalmic physicians, optometrists, orthoptists, nurses (with specialist training in ophthalmic care), technicians and administration staff. A Community Ophthalmic Physician Lead will be the lead clinician for the service within each CHO and will have responsibility for clinical governance within the PCET and all other contractually provided ophthalmic services within the CHO. The HSE will employ optometrists and technicians as staff members of an integrated eye service; this will be a new service development. The skill mix of the team will ensure the comprehensive assessment of the patient with each team member contributing according to their particular skills. The roles of individual members of the PCET may change/expand over-time as teams become established and detailed operational procedures are agreed

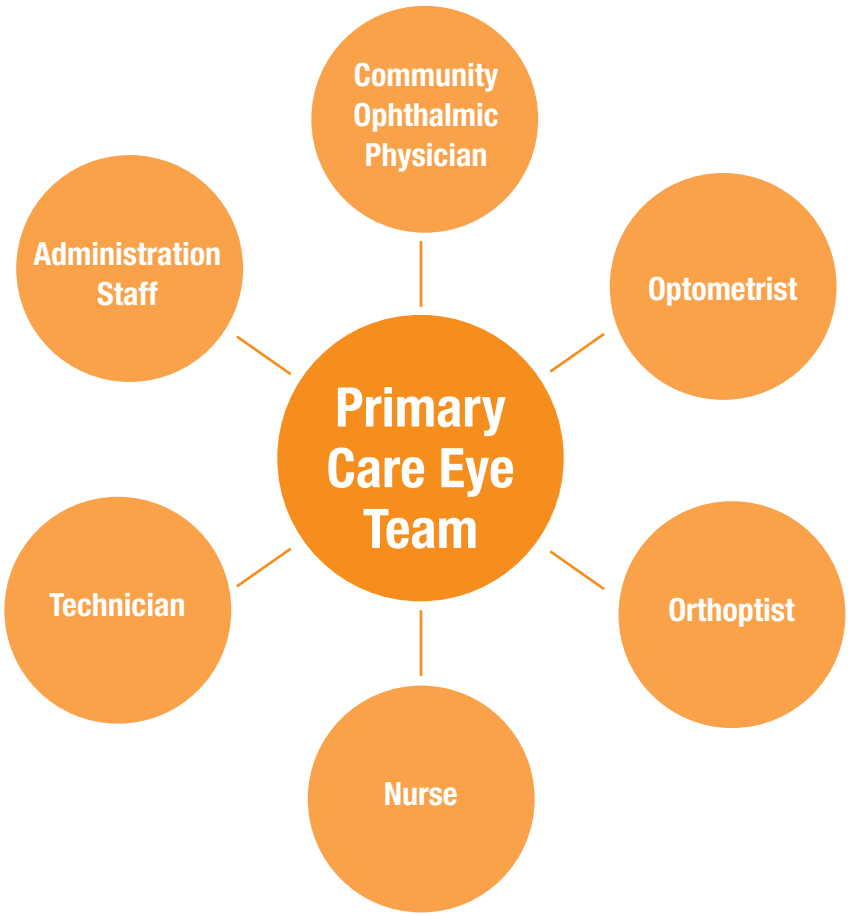


Figure 6.1: Primary Care Eye Team

6.2.2.1 Evidence to Support Integration of Optometrists to the Primary Care Eye Teams

As previously referenced, a key new development of the PCET model is the inclusion of optometrists as core team members. This decision was based on an analysis of their utilisation in other jurisdictions and also confirmation of their professional competencies. A systematic review was conducted in 2010[46] of all UK-based research papers published since 1997 regarding UK Eye Care Services that incorporate the role of optometrists in a variety of ways. The findings indicate that many optometrists are centrally engaged in hospital and community-based enhanced service delivery. Optometrists provide a safe and high quality service, which is already incorporated within the core skills of their initial degree training. Increased use of optometrists in Ireland was also recommended by a Competition Authority report in 2006[47] to reduce waiting times, particularly for certain schoolchildren who require eye examinations. Two HSE areas (Sligo and Dundalk) are currently piloting the employment of optometrists as part of their ophthalmic teams to great benefit.

In Ireland, optometrists are trained to carry out eye examinations to diagnose and assess vision defects, including myopia, hyperopia, astigmatism and presbyopia and prescribe glasses. They are also trained to detect and monitor eye diseases such as strabismus, amblyopia, cataract, glaucoma and macular degeneration. It is clear that further usage of optometrists, maximising their skill set, would help to provide a more comprehensive, accessible range of services to patients. This is best done in the context of a PCET with appropriate supervision, integrated working and clinical governance.

6.3 Governance

Subject to resourcing, each CHO Chief Officer will be responsible for the implementation of this report within their respective CHO. A Community Ophthalmic Physician Lead will be appointed to provide overall clinical governance for primary care eye services within their CHO. They will also have responsibility for ensuring quality assurance, value for money and performance management of the primary care eye services, including contractual arrangements. They will reference key strategy documents when implementing quality improvement such as the *National Standards for Safer Better Healthcare*[48] from the Health Information and Quality Authority (HIQA). and the HSE *Framework for Improving Quality in Our Health Service*[49]. They will report directly to the CHO Chief Officer or designate in accordance with the CHO operating model.

Each individual eye care professional working within the PCET will adhere to their required professional registration regulations and engage in continual professional development and evidence-based practice, operating within their scope practice. Staff should also adhere to relevant HSE policies relating to risk and incident management.

Due to the proposed transfer of many patients from the acute to the primary care setting, following the establishment of the PCETs and the provision of additional staffing, there will be opportunities for hospital consultant ophthalmologists to attend specialist clinics in the PCETs and for community ophthalmic physicians to attend clinics in the hospital setting to promote integrated care provision and shared governance.

6.4 Quality Assurance

Quality is a fundamental priority in the design of the new primary care eye services model and has been central to the determination of the resources required to ensure eye services are delivered in line with best practice. The effectiveness of the service will be monitored using clinical registries, audit, key performance indicators and quality outcome measures. Areas to be monitored include:

- Access including improved equity of access for all members of society
- Patient satisfaction using patient feedback as per HIQA standards[48]
- Clinical outcome measures
- Adherence to standards

The community ophthalmic physician leads will liaise with all stakeholders to implement a continuous quality improvement approach. This is in line with HSE *Framework for Improving Quality in Our Health Service.*[49]

6.5 Training Requirements

Each eye care professional will engage in continual professional development as required to maintain their professional registration. All PCETs will benefit from training in team working, communication, change management, lean processes and developing standard operating procedures. The relevant professional bodies will be requested to evaluate knowledge gaps in light of the range of services to be provided and run specific courses to meet these needs. The professional bodies will be requested to work together to run integrated training workshops, facilitated by the HSE, as appropriate.

Trainee medical ophthalmologists will have rotations in primary care as well as hospital settings. It is essential for all eye care professionals to have placements within primary care and acute care settings.

The Irish College of Ophthalmologists and the HSE, in liaison with the Irish College of General Practitioners, will develop specific training and assessment/treatment algorithms for GPs in relation to the management of routine eye conditions and conducting the 6-week eye check. Training will also be provided to all staff who conduct the newborn eye examination. The GP Training Programme will incorporate the new revised service arrangements in their education programme.

6.6 Primary Care Eye Services for Children

Primary care eye care services for children will include surveillance and screening provided by the PHN and the AMO and the assessment and management of eye conditions provided by the PCET. The following sections set out the evidence and future model, including care pathways, for these services.

6.6.1 Screening and Surveillance

Good vision is vital for the optimal development and wellbeing of children. Reduced vision can affect both physical and psychosocial areas of development, such as language, motor skills and parent/child interaction. Early detection provides the best opportunity for effective treatment. Screening for the detection of visual problems and eye disorders in children at the appropriate age is an important public health strategy.

The UK National Screening Committee (NSC)[50] defines screening as a process of identifying apparently healthy people who may be at increased risk of a disease or condition. They can then be offered information, further tests and appropriate treatment to reduce their risk and/or any complications arising from the disease or condition.

6.6.1.1 Review of International Literature on Vision Screening at Birth and Preschool

The neonatal period is regarded as crucial for the development of the eye and while visual disorders in the newborn are not common, if left untreated, they can have a severe impact on vision. A delay in detection of treatable diseases can have detrimental consequences for the child's future health and wellbeing. The consensus from various reviews of the literature and the UK NSC supports screening for eye abnormalities at birth and again at 6–8 weeks by a health professional.

Screening of preschool children <3 years of age is in general not recommended in the literature.[50-53] The US Preventive Services Task Force concluded that the benefits of vision screening for children <3 years of age are uncertain and that the balance of benefits and harms cannot be determined for this age group.[52] Most studies show that screening and treatment later in the preschool years (3–5 years of age) seem to be as effective at preventing amblyopia as screening and treatment earlier in life. However, most national policies and guidelines recommend that vision is reviewed at each

child health check.[53-63] This is usually in the format of questions to parents regarding their child's vision, any concerns they may have and observation of visual behaviour (but it does not include the corneal light reflex).

6.6.1.2 Recommendations for Vision Screening at Birth and 6–8 Week Check

The group recommends that an eye examination is done at birth and at 6–8 weeks. No other vision screening should take place until the school vision screen. At each PHN core child health assessment, the PHN should ask the parents if they have any concerns regarding their child's vision and visual behaviour should be observed. The PHN should complete a vision questionnaire in line with *BHfC* recommendations and/or the forthcoming Revised Child Health Model. The PCESRG agreed to recommend the removal of the corneal light reflex test from the core child health surveillance checks in line with other national policies and based on expert opinion regarding the difficulty in conducting this test, even by experienced eye health professionals.

Care Pathway

- An eye examination will be completed at birth by the hospital paediatric team, as part of the physical examination of the newborn and at the 6–8 week check-up the GP will complete a further examination.
- Visual inspection of both eyes looking for any structural abnormality, abnormal appearance or abnormal eye movement will be completed by the PHN at the primary PHN visit.

Onward Referral Criteria

- Structural abnormality/any abnormal appearance of the eyes/eye movement.
- Infants at high risk including babies who are:
  - very premature (<32 weeks, gestation)
  - low birthweight babies (<1-500 g)
    - those with family histories (parent or sibling) of childhood onset of congenital cataracts, retinoblastoma, glaucoma and metabolic or genetic diseases
    - those who have significant developmental delay or neurologic difficulties
  - those with systemic disease associated with eye abnormalities.
- Any constant manifest strabismus

Staffing Required

- Medical doctor (exam done as part of physical exam of the newborn and 6–8 week check by GP)
- PHN at primary PHN visit

Equipment Required

- Ophthalmoscope

Training

- Ongoing refresher training for PHNs
- Develop refresher online training programme for GPs (RCOphth, ICGP)

6.6.1.3 Recommendations for Preschool Vision Surveillance (Vision Checks at 3 months–3.5 years)

- At each PHN core child health assessment, the PHN should ask the parents if they have any concerns regarding their child's vision, and visual behaviour should be observed.
- The PHN should discuss or complete with the parents the 'Can Your Baby See' vision questionnaire.
- The PHN should remind the parent of the information and advice regarding vision in the '*Caring for your Baby*' booklets. ('*Caring for Your Baby and Caring for Your Child*' are three HSE booklets which contain information to help parents care for themselves and their baby or young child.) They are usually issued to new parents by

the PHN on the first visit after the baby is born. There are three booklets covering three main phases of the baby's early years; baby to 6 months; 6 months to 2 years; and 2-5 years. Each booklet contains information on what a baby can see at various ages **http://www.hse.ie/eng/health/child/cfyb/**).

- The group agreed to recommend the removal of the corneal light reflex test from the core child health surveillance checks, in line with other national policies and based on expert opinion regarding the difficulty in conducting this test, even by experienced eye health professionals.

Care Pathway

- Visual inspection of both eyes looking for any structural abnormality, abnormal appearance or abnormal eye movements to be carried out.
- Parents to be asked if they have any concerns regarding their child's vision at each child health check/ assessment.
- PHN to discuss and complete with the parents ' Can Your Baby See' vision questionnaire and follow referral pathways – see Appendices 18 and 19 for existing and updated 'Can your baby see' questionnaires.
- PHN to record details of assessment and refer in line with care pathways to the PCET.

Onward Referral Criteria

- Structural abnormality/any abnormal appearance of the eyes/eye movement.
- Family history in first degree relative with strabismus or amblyopia and parental concern.
- Any manifest strabismus.
- Parental concern as based on the 'Can Your Baby See' questionnaire.

Staffing Required

- PHN and/or AMO

Equipment Required

- 'Can Your Baby See' questionnaire
- Child health record to include vision questionnaire for each PHN child health check/assessment.

PCET Preschool Vision Surveillance Care Pathway

The preschool child is referred by the PHN/GP/AMO or optometrist to the PCET (see Figure 6.2). The referral is triaged and the initial assessment is completed by the PCET. The child is discharged if the vision is normal and there are no structural defects of the eye. If a child has a refractive error, he/she will be provided with a prescription for glasses to be dispensed by their local optometrist/dispensing optician his/her care may be transferred to the local optometrist before the age of 8 years, at the discretion of the PCET. A complex refractive error and or amblyopia will require ongoing management within the PCET, typically up to 8 years of age, until the child is ready for discharge to their local optometrist. The child with strabismus and/or medical issues will require ongoing management with the PCET and/or the hospital consultant ophthalmologist up to 8 years of age. Thereafter, his/her ongoing care may be transferred to the local optometrist.

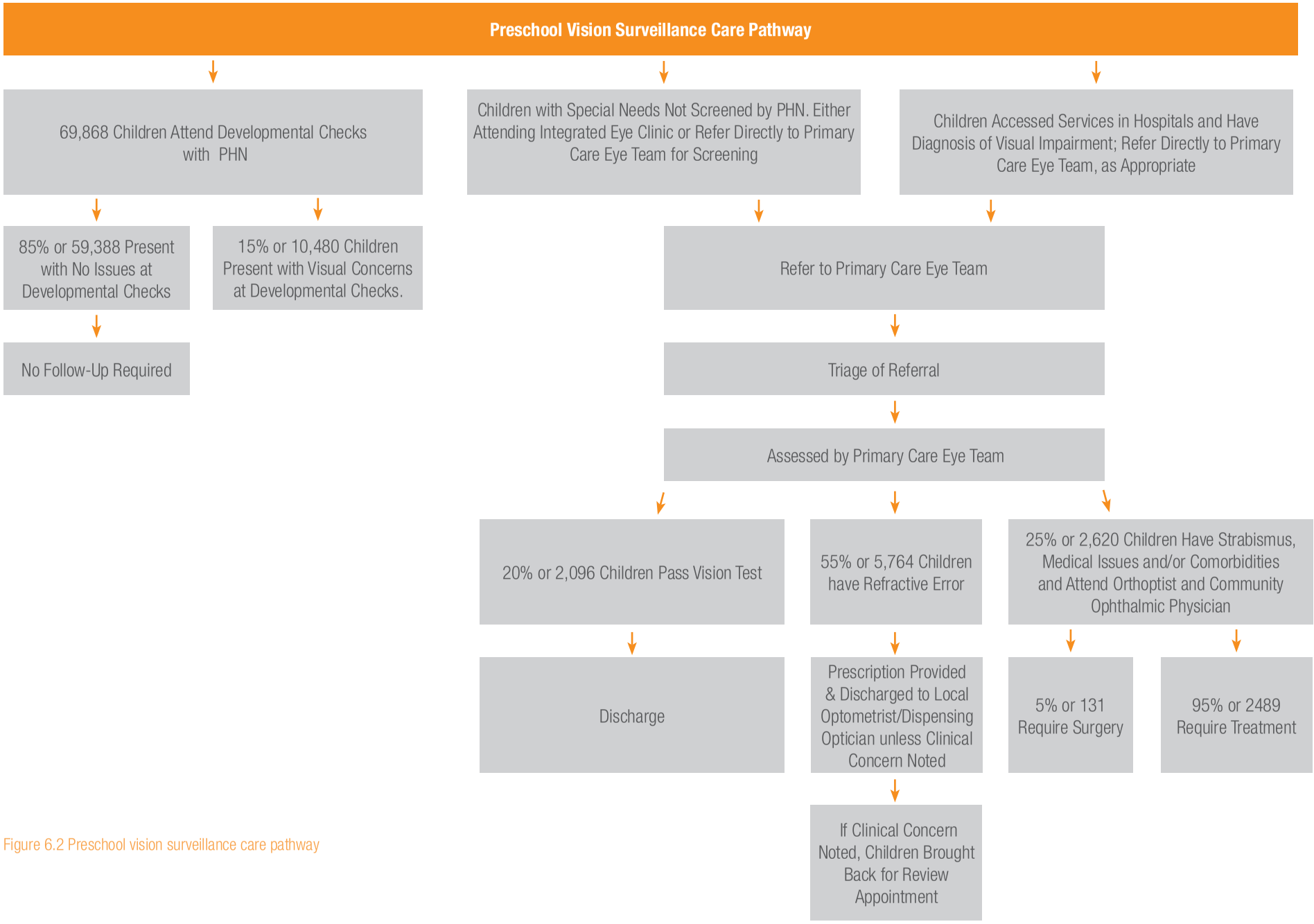


Figure 6.2 Preschool vision surveillance care pathway

Tables 6.1–6.5 outline the clinical staffing requirements to support the above care pathway.

Staff	No. of Children	No. of Hours of Input	No. of Weeks of Input	WTE	15% DNA Rate	Total WTE
Optometrist - 100%	10480	3668	99.14	2.36	0.35	2.71
Orthoptist - 100%	10480	3668	99.14	2.36	0.35	2.71
Ophthalmologist - 100%	10480	2096	56.65	1.35	0.20	1.55
Total						**6.97**

Table 6.1: Initial assessment following preschool vision surveillance: 10,480 children (15% of the total cohort) per year

Staff	Age 2	Age 3	Age 4	No. of Children	No. of Hours of Input	No. of Weeks of Input	WTE	15% DNA Rate	Total WTE
Optometrist Hrs	0	0.4	0.4	1310	1048	28.32	0.67	0.10	0.78
Orthoptist Hrs	2	2	2	1310	7860	212.43	5.06	0.76	5.82
Ophthalmologist Hrs	0	0.4	0.4	1310	1048	28.32	0.67	0.10	0.78
Total									**7.38**

Table 6.2: Treatment following preschool vision surveillance: 1,310 children (12.5% of the 10,480 children assessed) per year

Staff	Age 2	Age 3	Age 4	No of Children	No of Hours of Input	No of Weeks of Input	WTE	15 % DNA Rate	Total WTE
Optometrist Hrs	0	0.4	0.4	1310	1048.00	28.32	0.67	0.10	0.78
Orthoptist Hrs	0	0	0	1310	0.00	0.00	0.00	0.00	0.00
Ophthalmologist Hrs	0	0.2	0.2	1310	524.00	14.16	0.34	0.05	0.39
Total									**1.16**

Table 6.3: Monitoring following preschool vision surveillance: 1,310 children (12.5% of the 10,480 children assessed) per year

Staff	Age 2	Age 3	Age 4	No of Children	No of Hours of Input	No of Weeks of Input	WTE	15 % DNA Rate	Total WTE
Optometrist Hrs	0	0.4	0.4	5,764	4,611	109.79	2.97	0.45	3.41
Total									**3.41**

Table 6.4: Refraction in the PCET following preschool vision surveillance: 5,764 children (55% of the 10,480 children assessed) per year

Optometrist	7.68
Orthoptist	8.53
Ophthalmologist	2.71
Total	**18.92**

Table 6.5: Total WTE required for intervention following preschool vision surveillance

6.6.2 School Vision Screening

6.6.2.1 Review of International Literature

School-Entry (Junior Infants class)

International guidelines and recommendations support screening for visual impairment (primarily to detect amblyopia) between the ages of 4 and 5 years. For some countries this coincides with a formal preschool year. While screening before school entry may optimise treatment outcomes, the capture rates with community preschool vision screening is low, averaging 64.8%.[64] School screening (at Junior Infants) has the advantages of a captive audience, reduces demand on parents and ensures all children, regardless of their socioeconomic status, have access to a screening programme.

School Exit

A review of the evidence suggests that vision screening at older age groups results in very few or no new cases of eye pathology detected.[50-52] Therefore, most countries do not advocate school-exit screening.

Colour Vision

The benefit of screening for colour vision defects is controversial, as congenital colour deficiencies are neither progressive nor treatable. There is no clear association between congenital colour deficiencies and adverse health outcomes or educational achievements. Therefore, colour vision screening does not adequately fulfil certain screening criteria.[61-63,65] Ramachandren et al (2014).[66] recently reviewed the evidence for colour vision screening in 2014 and concluded that the evidence supported either not adopting or else disinvesting routine colour vision screening of school students. Countries such as the UK and Australia[56] do not recommend colour vision screening in school. They make health promotion materials available online and provide schools with information on how to detect and manage colour vision defects.

Screeners

Most guidelines recommend that vision screening can be performed by orthoptists or by suitably trained non-specialist staff.[7-68] In many countries, including Ireland, this is done by public health/school nurses, although in New Zealand it is carried out by a technician who has had specific training.[55] The UK NSC recommends that this training is orthoptic-led.[50] The Australian Children's Vision Screening Project found that the workforce available to conduct vision screenings often differed in the Australian context from that reported in international studies.[51] Therefore, they recommended that primary screeners receive appropriate training and support to conduct the screen.

School Vision Screening Test

Linear LogMAR visual acuity charts are the recommended screening test in the literature for school-aged children; the Keeler linear crowded LogMAR chart is mostly used in the UK.[50]

Automated vision screening technology has evolved extensively over the past decade. These instruments usually identify the presence and magnitude of optical and physical abnormalities of the eyes by means of automated software. They detect amblyogenic risk factors rather than actually detecting amblyopia. They are considered most useful in screening preverbal children. A statement from the American Academy of Paediatrics recommended that instrument-based screening technologies may be used as an alternative to visual acuity screening with vision charts in children from 3 through to 5 years of age, after which visual acuity screening with vision charts becomes more efficient and less costly.[69] The possible future use of automated screening tools will be kept under review.

6.6.2.2 Recommendations for School Vision Screening in Ireland

Evidence from the literature recommends that clearly outlined and appropriately resourced referral pathways are crucial to the success of vision screening programmes. International guidelines and policies recommend referral to a suitably trained eye health professional for evaluation and if necessary diagnosis and treatment. In America, Australia, New Zealand and the UK these include ophthalmologists, orthoptists and/or optometrists.

The typical referral pathway in the UK is for referral to joint orthoptic/optometry clinics where children who fail the vision test, with less than 0.2000 LogMAR acuity, undergo an orthoptic assessment and a cycloplegic refraction and fundus and media examination. From here the children will either be discharged, followed up by the orthoptist if an abnormality is found that can be treated with glasses and/or occlusion or referred to a medical ophthalmologist if there is other pathology.

Screening for visual impairment at school entry should be offered, i.e. Junior Infant class. However, screening at older ages and for colour vision is not recommended.

Screening should be undertaken by PHNs and/or SPHNs using the crowded LogMAR acuity charts. It is acknowledged by the group that other non-specialist staff with orthoptic-led training could perform the school vision screening. However, as PHNs/SPHNs are currently entering schools to do hearing screening at school entry (and height and weight in some areas) and immunisations, it was considered best to continue with this policy and reduce class disturbances during the school year. The PHN/SPHN also has the opportunity to incorporate a holistic assessment of the child as part of the school health programme with referrals to other professionals as required including psychology, speech and language therapy, and social work in conjunction with parental/teacher concerns. The role of screening technicians may be reviewed at a future stage in liaison with the Health and Wellbeing Division.

Children who are late entries but are in Junior Infants will receive school vision screening. Children who are older will be seen by the PHN/SPHN for a vision test.

Adolescents whose career planning might be affected by a colour vision impairment should discuss this with their career guidance counsellor. This should be incorporated into health promotion advice in schools and on the HSE website. A simple leaflet will be devised regarding colour vision testing with a link to a webpage for further information.

Children who do not the pass the vision screen are then referred to the PCET. All relevant PCET professionals will see children at their first appointment to reduce the risk of children, especially children from a lower socioeconomic background, not attending their next appointment.

A standardised consent policy for school screening is in place but requires review and amendment to include guidance for consent for when parents are separated.

Care Pathway

Screening for visual impairment in children at school entry.

Referral pathway

Children to be seen at the Integrated Eye Clinic for further assessment – see Figure 6.3.

Onward Referral Criteria

Referral for further testing should be made if 0.2000 LogMar acuity is not achieved in one or both eye, despite good cooperation.

Staffing Required

PHN/SPHN with orthoptic-led training.

Screening Test

Visual acuity should be tested with the Keeler linear crowded LogMAR letter test.

Training

Provision of regular training for PHNs

- Ongoing refresher training
- Training on policies, procedures and guidelines

PCET School Vision Screening Care Pathway

The child is referred by the PHN/GP/AMO or optometrist to the PCET (see Figure 6.3). The referral is triaged and the initial assessment is completed by the PCET. The child is discharged if his/her vision is normal and there are no structural defects of the eye. If a child has a refractive error, he/she will be provided with a prescription for glasses to be dispensed by their local optometrist/dispensing optician; their care may be transferred to his/her local optometrist before the age of 8 years at the discretion of the PCET. A complex refractive error and or amblyopia will require ongoing management within the PCET, typically up to 8 years of age until the child is ready for discharge to his/her local optometrist. The child with strabismus and/or medical issues will require ongoing management with the PCET and/or the hospital consultant ophthalmologist up to 8 years of age. Thereafter, his/her ongoing care may be transferred to the local optometrist.

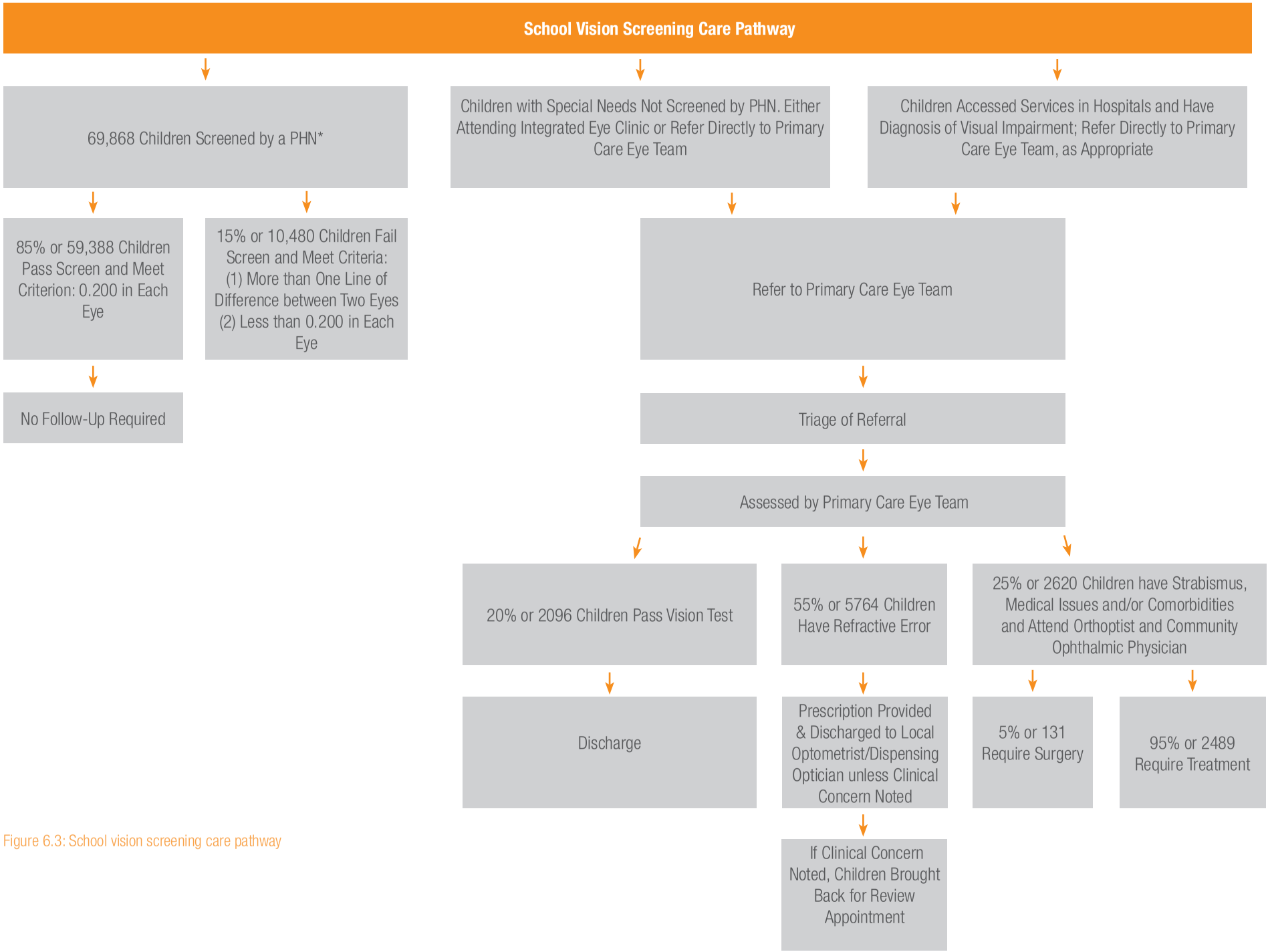


Figure 6.3: School vision screening care pathway

Tables 6.6–6.10 outline the clinical staffing requirement to support the above care pathway.

Staff	No. of Children	No. of Hours of Input	No. of Weeks of Input	WTE	15% DNA Rate	Total WTE
Optometrist - 100%	10480	3668	99.14	2.36	0.35	2.71
Orthoptist - 100%	10480	3668	99.14	2.36	0.35	2.71
Ophthalmologist - 100%	10480	2096	56.65	1.35	0.20	1.55
Total						**6.98**

Table 6.6: Initial assessment following school vision screening: 10,480 children (15% of total cohort) per year

Staff	Age 2	Age 3	Age 4	No. of Children	No. of Hours of Input	No. of Weeks of Input	WTE	15 % DNA Rate	Total WTE
Optometrist Hrs	0	0.4	0.4	1310	1048.00	28.32	0.67	0.10	0.78
Orthoptist Hrs	2	2	2	1310	7860.00	212.43	5.06	0.76	5.82
Ophthalmologist Hrs	0	0.4	0.4	1310	1048.00	28.32	0.67	0.10	0.78
Total									**7.37**

Table 6.7: Treatment following school vision screening: 1,310 children (12.5% of the 10,480 children assessed) per year

Staff	Age 2	Age 3	Age 4	No. of Children	No. of Hours of Input	No. of Weeks of Input	WTE	15 % DNA Rate	Total WTE
Optometrist Hrs	0	0.4	0.4	1310	1048.00	28.32	0.67	0.10	0.78
Orthoptist Hrs	0	0	0	1310	0.00	0.00	0.00	0.00	0.00
Ophthalmologist Hrs	0	0.2	0.2	1310	524.00	14.16	0.34	0.05	0.39
Total									**1.16**

Table 6.8: Monitoring following school vision screening: 1,310 children (12.5% of the 10,480 children assessed) per year

Staff	Age 2	Age 3	Age 4	No. of Children	No. of Hours of Input	No. of Weeks of Input	WTE	15 % DNA Rate	Total WTE
Optometrist Hrs	0	0.4	0.4	5,764	4,611	109.79	2.97	0.45	3.41
Total									**3.41**

Table 6.9: Refraction in the PCET following school vision surveillance: 5,764 children (55% of the 10,480 children assessed) per year

Staff	WTE
Optometrist	7.68
Orthoptist	8.53
Ophthalmologist	2.71
Total	**18.92**

Table 6.10: Total WTE required for intervention following school vision screening

Notes School Vision Screening Care Pathway

1. Referral rates from school vision screening programmes vary in the literature from 5% to 40%, depending on the referral criteria, experience of the screener and the test(s) used.[54-63] A survey of Directors of Public Health Nursing for the school year 2013–2014, conducted as part of the PCESRG work, showed rates of 6–29%, average 15%. Based on this and reported rates from international literature, a referral rate of 15% was agreed as a current target. However, the referral rates are lower in areas where dedicated SPHNs are trained in vision screening. Therefore, we could expect this number to decrease with a specialised training programme.

2. Approximately 20% of the referrals from school vision screening will have nothing abnormal detected. This approximation is based on local and international evidence and varies depending on the referral criteria, experience of the screener and the test(s) used.[54-63]

3. The data used to calculate the expected number of children with vision problems are based on prevalence data from the literature. As the prevalence of visual disorders, in particular refractive errors, varies considerably depending on ethnicity, data from the UK and Northern Ireland were primarily used.[50-51, 58] Approximately 7–9% will have a refractive error, 2–3% will have strabismus and 2–5% will have amblyopia. Obviously, some will have more than one condition. The figures, therefore, are estimates only and are primarily for the purposes of clinic and workforce planning.

6.6.3 Primary Care Eye Team Input for Children and Adolescents after Surveillance and Screening

Children who have a visual impairment identified by school vision screening or children of medical card holders continue to receive a service until 16 years of age. All other children are eligible to receive a service until they are 12 years of age or have left primary school. The majority of children aged under 8 years will be managed by the eye professionals working within PCETs; up to 8 years of age is the critical period for vision development in children and the critical period for the treatment of amblyopia, if present. The majority of children aged 8 years and over (and some children aged less than 8 years, at the discretion of the PCET) will be managed by their local optometrist. This recommendation will result in the greater capacity in the PCET to treat more complex cases, while integrating with the network of optometrists in the area in the management of less complex cases by them. The provision of care by local optometrists to children aged 8 years and over will require an updated contractual arrangement with commercial optometrists.

Execution of the care pathways presented below should be flexible to allow for cross-cover of staff and an increased expansion of eye care professional roles, provided that professions are working within their scope of practice.

6.6.3.1 Children with Special Needs

As specified in the preschool and school vision screening care pathways, children with special needs will be referred directly into the PCET for assessment and management. Table 6.11 outlines the clinical staffing requirement to support the management of children with special needs.

	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	No of Children	No. of Hours of Input	No. of Weeks of Input	WTE	15% DNA Rate	Total WTE
Optometrist Hrs	0.5	0.5	0.5	0.5	0.50	0.50	0.50	837	2929.50	79.18	1.89	0.28	**2.17**
Orthoptist Hrs	1	1	1	1	1.00	1.00	1.00	837	5859.00	158.35	3.77	0.57	**4.34**
Ophthalmologist Hrs	0.6	0.6	0.6	0.6	0.60	0.60	0.60	837	3515.40	95.01	2.26	0.34	**2.60**
Total													**9.11**

Table 6.11: Total clinical WTE required for children with special needs

6.6.3.2 Paediatric Congenital Care Pathway

A baby with congenital cataract or glaucoma or retinoblastoma should be identified early; either at birth or at an early check with the PHN, GP or AMO. The baby will, if within the hospital setting, be urgently referred to the hospital consultant ophthalmologist or to the PCET if the baby is at home. If referred to the PCET, the referral will be triaged urgently and an assessment will be completed by the PCET. The baby may be referred to the hospital consultant ophthalmologist for management, as appropriate. The hospital consultant ophthalmologist will discharge the baby back to the PCET for ongoing management/monitoring of refraction and/or amblyopia issues.

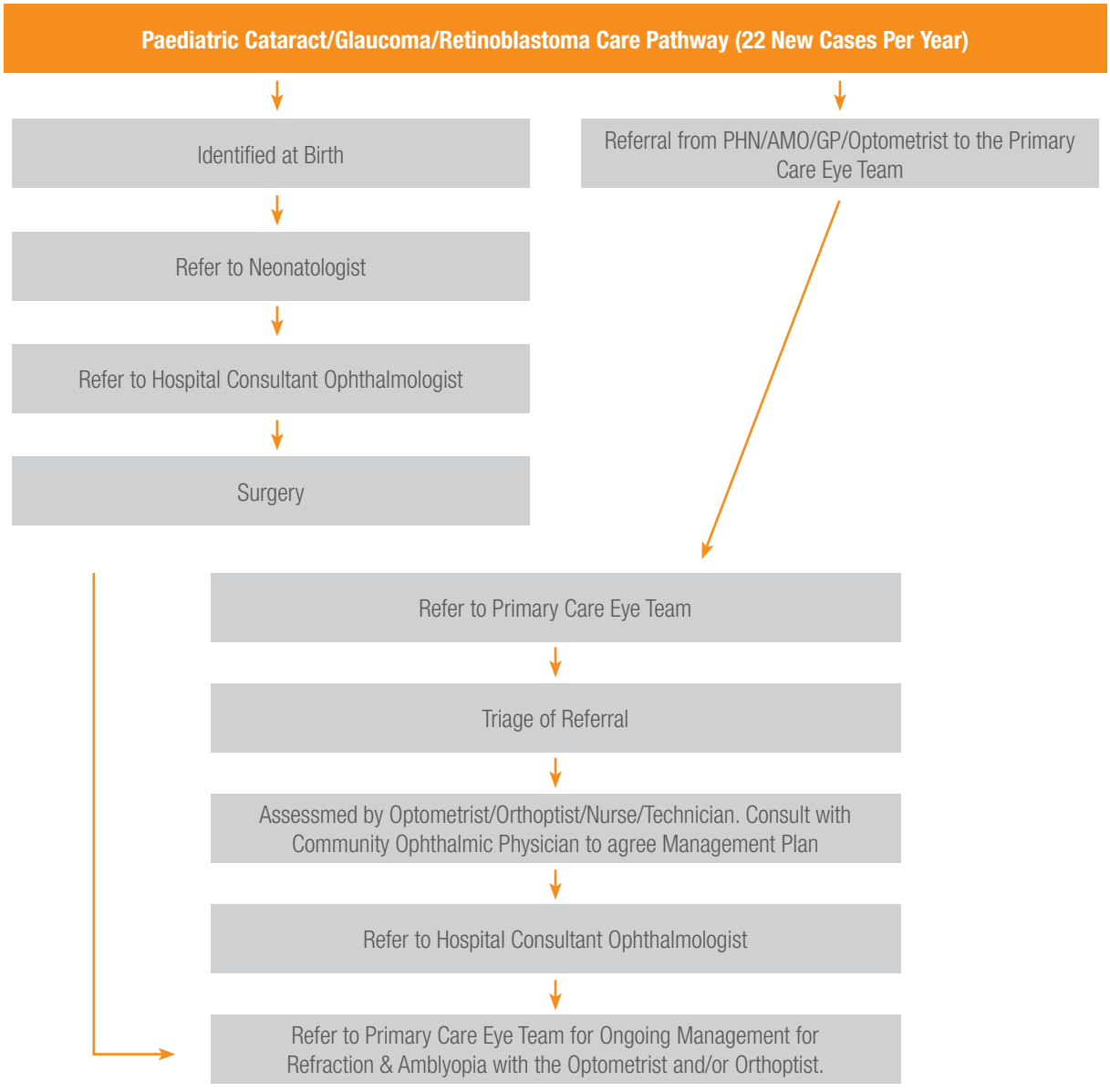


Figure 6.4: Paediatric cataract/glaucoma/retinoblastoma care pathway

Tables 6.12–6.15 outline the clinical staffing requirement to support the above care pathway.

Staff	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14	Age 15	Age 16	Age 17	Age 18	No. of Children	No. of Hours of Input	No. of Weeks of Input	WTE	15% DNA Rate	Total WTE
Optometrist Hrs	1.5	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	252	1890	51.08	1.22	0.18	**1.40**
Orthoptist Hrs	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0	0	0	0	0	252	882	22.62	0.54	0.08	**0.62**
Ophthalmologist Hrs	1.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	252	2646	71.51	1.70	0.26	**1.96**
Total																								**3.98**

Table 6.12: Cataracts: 14 children per year

Staff	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14	Age 15	Age 16	Age 17	Age 18	No. of Children	No. of Hours of Input	No. of Weeks of Input	WTE	15% DNA Rate	Total WTE
Optometrist Hrs	1.5	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	72	540	14.59	0.35	0.05	**0.40**
Orthoptist Hrs	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0	0	0	0	0	72	252	6.46	0.15	0.02	**0.18**
Ophthalmologist Hrs	1.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	72	756	20.43	0.49	0.07	**0.56**
Total																								**1.14**

Table 6.13: Glaucoma: 4 children per year

Staff	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14	Age 15	Age 16	Age 17	Age 18	No. of Children	No. of Hours of Input	No. of Weeks of Input	WTE	15% DNA Rate	Total WTE
Ophthalmologist Hrs	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	72	1728	46.70	1.11	0.17	**1.28**
Total																								**1.28**

Table 6.14: Retinoblastoma: 4 children per year

Total WTE Required for Congenital Eye Conditions	
Optometrist	1.80
Orthoptist	0.80
Ophthalmologist	3.80
Total	**6.39**

Table 6.15: Total WTE required for congenital eye conditions

6.6.3.3 Routine Paediatric Visual Concern Beyond School Vision Screening at Junior Infants

If there is a concern regarding a child's vision or visual health separate to the school vision screen, the teacher, parent or guardian will notify the SPHN. The SPHN will complete a distance visual acuity test with the child and if the child fails the nurse will test each eye separately at a reading distance of 35cm, utilising the near LogMAR test. If the child cannot read N6 optotype with either eye and/or is aged under 8 years and/or he/she have a visual health concern, he/she will be referred to their PCET.

If the child can read N6 optotype with each eye, he/she is presenting with myopia and will be referred to the local optometrist for refraction. They will also be referred to the local optometrist if aged over 8 years. The SPHN will provide their parent with a letter that will allow access to assessment and/or glasses with the local optometrist on a biennial basis (as long as their eligibility allows.

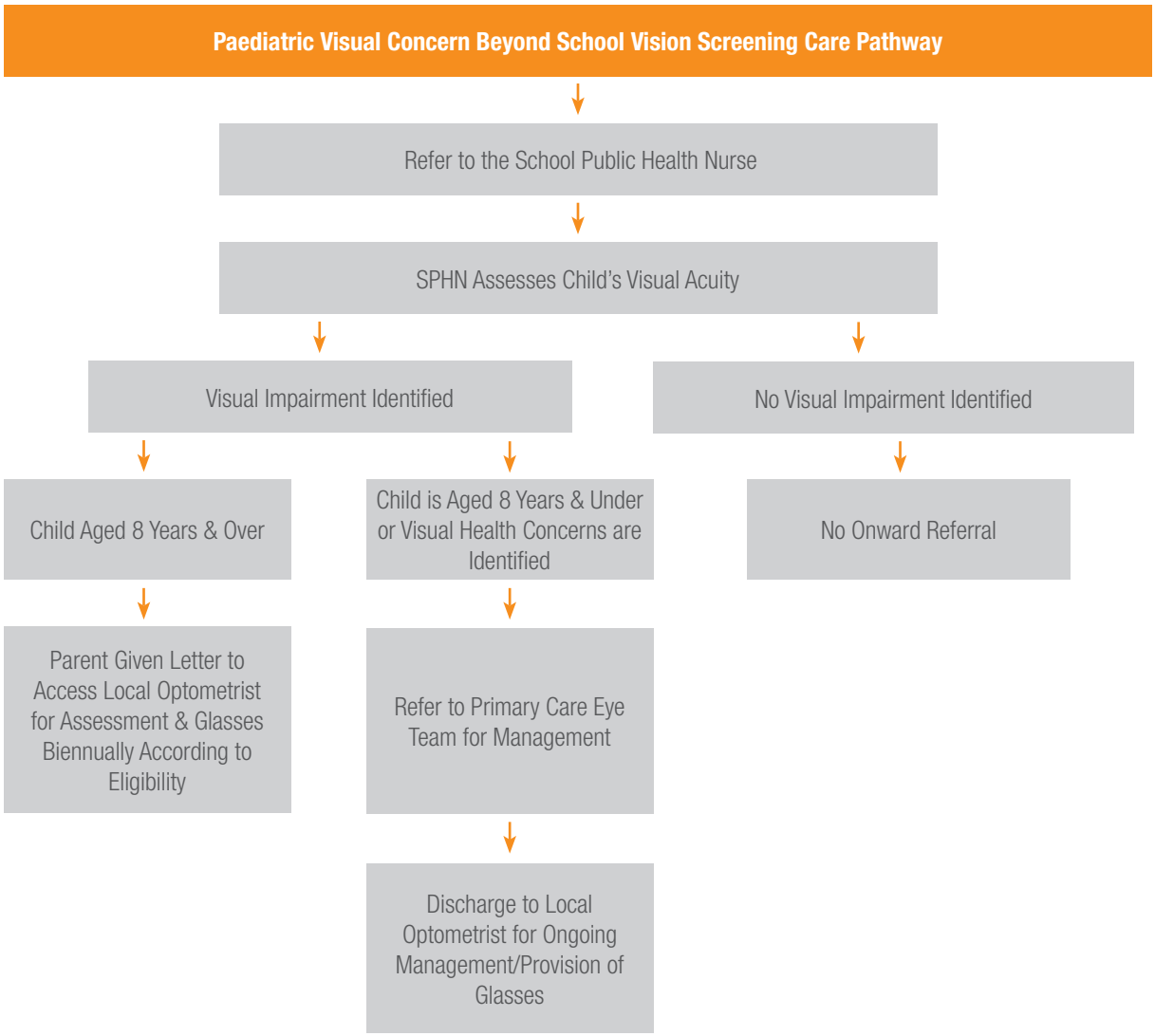


Figure 6.5 Routine Paediatric Visual Concern Beyond School Vision Screening at Junior Infants Care Pathway

Table 6.16 outlines the clinical staffing requirements to support the above care pathway.

	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	No. of Children	No. of Hours of Input	No. of Weeks of Input	WTE	15% DNA Rate	Total WTE
Nurse/Technician	0.2	0.2	0.2	0.2	0.2	0.2	8,400	10080	240	6.49	1	7.46
Optometrist Hrs	0.2	0.2	0.2	0.2	0.2	0.2	8,400	10080.00	240.00	6.49	0.97	7.46
Orthoptist Hrs	0.2	0.2	0.2	0.2	0.2	0.2	8,400	10080.00	240.00	6.49	0.97	7.46
Ophthalmologist Hrs	0.1	0.1	0.1	0.1	0.1	0.1	8,400	1680.00	40.00	1.08	0.16	1.24
Total												**23.62**

Total 6.16: WTE required for Routine Paediatric Visual Concern Beyond School Vision Screening at Junior Infants

6.6.3.4 Paediatric Minor Injury/Corneal Foreign Body/Sore Eye Treatment Care Pathway

A child with a minor injury/corneal foreign body/sore eye may present to his/her local GP or optometrist (see Figure 6.6). If the child does not respond to initial intervention or if the condition is thought to be serious, then the GP or optometrist will refer the child to the PCET or local hospital.

The child may also be referred directly to the PCET without attending the GP or optometrist. The referral will be triaged and the initial assessment completed by the PCET. The cause of the eye disease will be determined and treatment initiated. The child will be managed within the PCET, if possible, but may require an onward referral for further investigations/treatment. The local hospital may discharge children to the PCET for ongoing monitoring. All children will be discharged from the PCET when appropriate and some may have their care transferred to their local optometrist/GP, as appropriate.

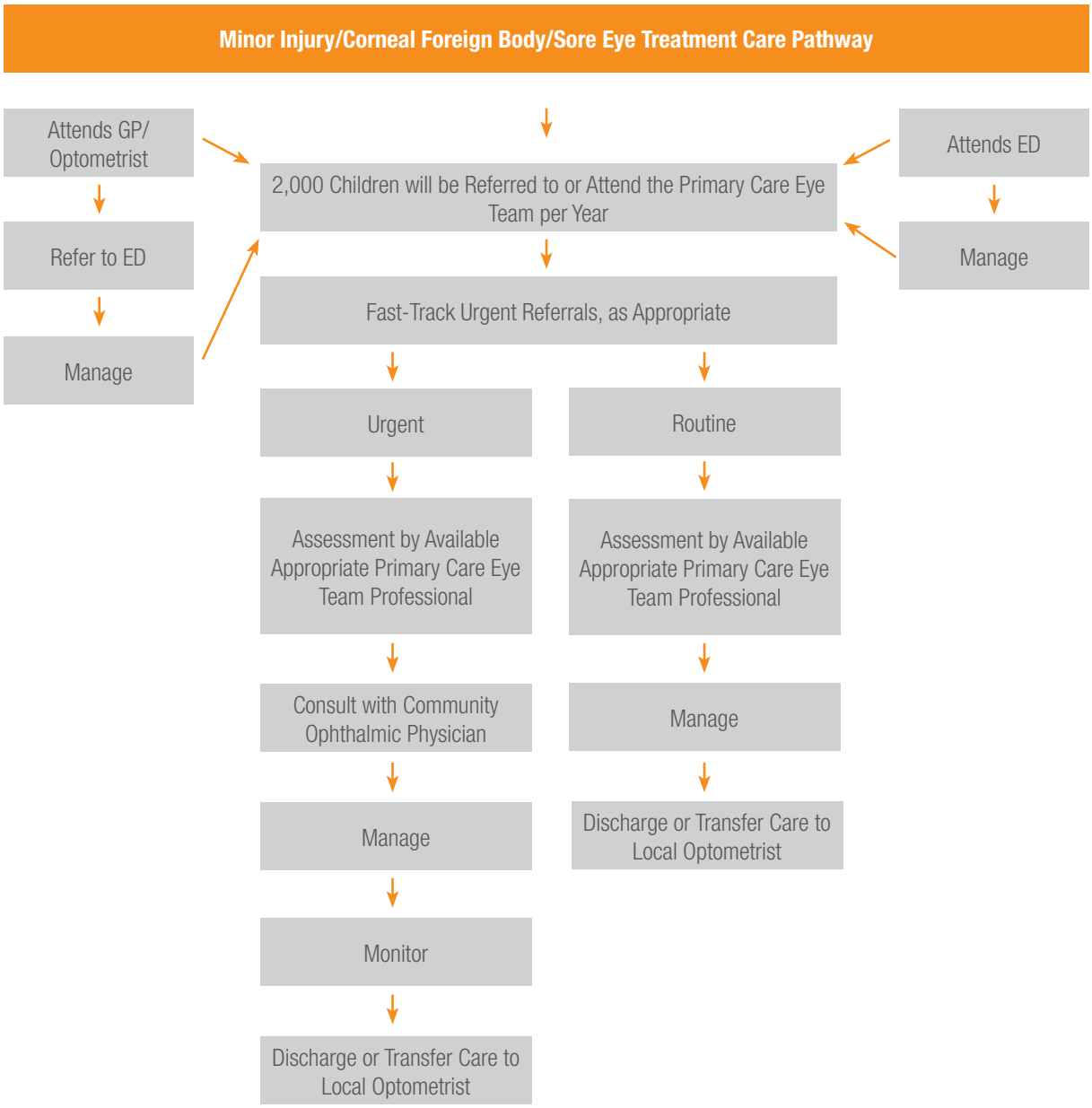


Figure 6.6: Paediatric minor injury/corneal foreign body/sore eye treatment care pathway

Tables 6.17–6.18 outline the clinical staffing requirements to support the above care pathway.

No. of Patients	No. of Hours of Intervention Per Year Per Ophthalmologist	No. of Weeks of Input Per Ophthalmologist	Ophthalmologist WTE Requirement	No. of Hours of Intervention Per Year Per Optometrist	No. of Weeks of Input Per Optometrist	Optometrist WTE Requirement
2,000	1,200	32	**0.77**	1,200	32	**0.77**
15% DNA Rate			**0.12**			**0.12**
Total			**0.89**			**0.89**

Table 6.17: 2,000 children seen per year

Total WTE Required for Intervention	
Optometrist	0.89
Ophthalmologist	0.89
Total	**1.78**

Table 6.18: Total WTE required for intervention for minor injury / corneal foreign body/sore eye treatment

6.7 Primary Care Eye Team Services for Adults

The PCETs will be staffed and equipped to provide a larger range of services including medical and minor surgery care to adult patients with medical cards. Staff will also require additional training and upskilling to provide the full range of services. As the PCETs are rolled out, a large proportion of care for adult patients with GMS eligibility (estimated at 60% of current hospital OPD activity) will transfer from acute settings and the existing COSMTS (pilot) to the PCETs. These are patients who are currently receiving their care in the hospital setting (with the exception of COSMTS patients) but can receive their care in the community setting once the appropriate facilities and staffing are available. Execution of the care pathways presented below should be flexible to allow for cross-cover of staff and an increased expansion of eye care professional roles, provided that professions are working within their scope of practice. A national policy needs to be developed in line with legislation to detail how eligible children can transition from paediatric to adult eye care services.

6.7.1 Age-Related Macular Degeneration (AMD) Care Pathway

In a well-integrated system much of the management of patients with AMD can be delivered in the primary care setting. The following is how patients presenting with AMD will be managed by the PCET.

The patient will be referred to the PCET by their GP or optometrist (see Figure 6.7). Referral criteria will be developed to guide when an optometrist/GP needs to refer the patient to the PCET. The referral will be triaged and the assessment completed by the PCET. If wet AMD is diagnosed, a treatment course of injections may be prescribed. The patient will then be monitored regularly by the PCET and may be referred on to a hospital consultant ophthalmologist, if further treatment is required. The patient may continue to be cared for by the PCET or may have their care transferred to their local optometrist, as appropriate and this will be subject to the clinical governance arrangements as detailed in section 6.11. If the diagnosis is dry AMD, the patient will be counselled appropriately regarding the natural history of the disease and will be advised on nutritional supplement usage. He/she will also be referred to NCBI for the provision of low vision support/aids, if required.

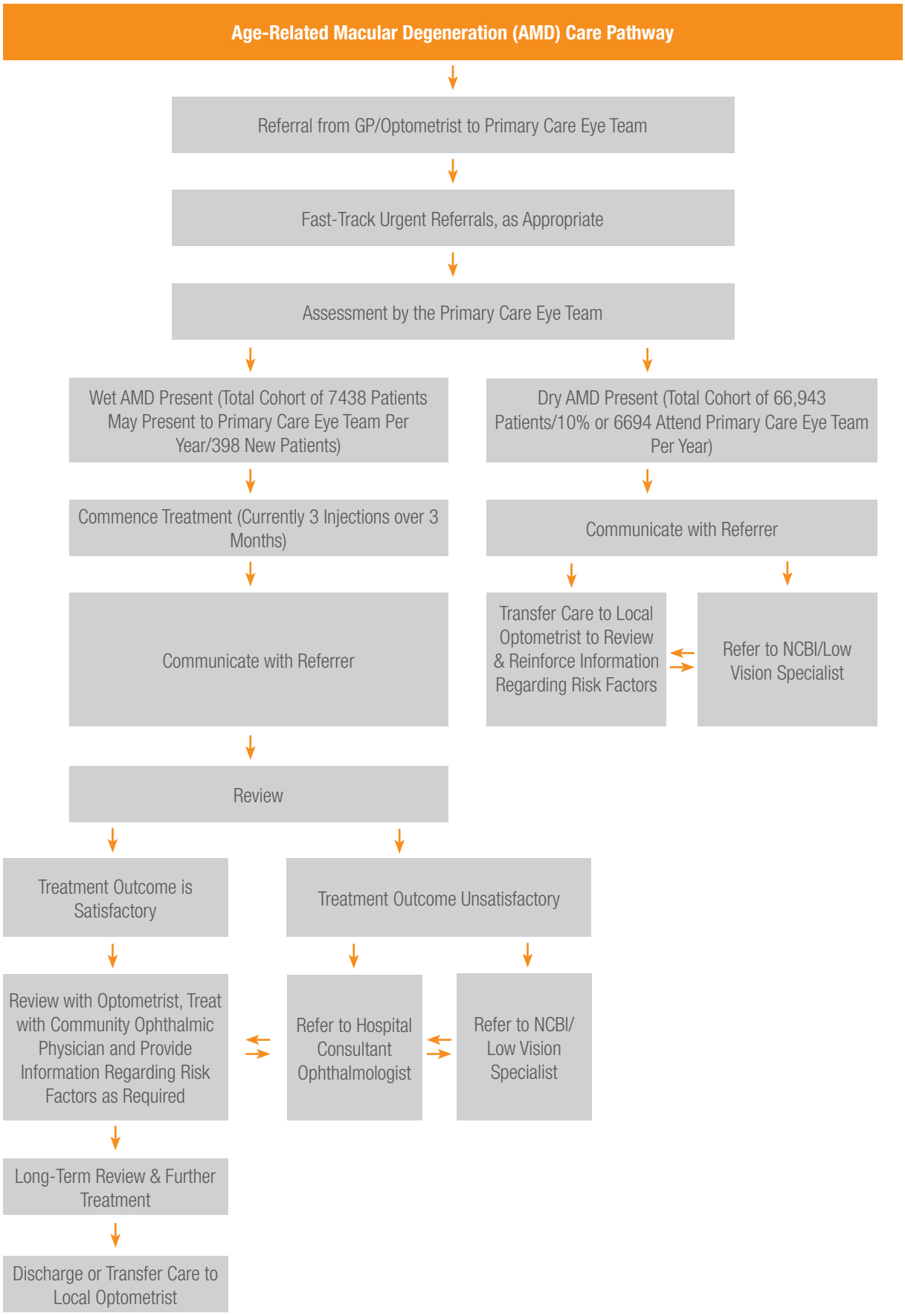


Figure 6.7: Age-related macular degeneration care pathway

Tables 6.19–6.21 outline the clinical staffing requirements to support the above care pathway.

Age	% AMD	Population	GMS	AMD Pop.	AMD Pop. + 40% Increase in 65+. Years by 2021	Wet AMD Pop. (10%)	Dry AMD Population	10% of Dry AMD Pop. Requiring PC Intervention	New Population Per Year Per Age Group + 40%	GMS	New Wet AMD Cases Per Year
50-64	5%	737,694	295,078	14,754	15,728	1,573	14,155	1416	25,340	10,136	51
65-74	7.80%	304,828	146,927	11,460	16,044	1,604	14,440	1444	16,240	9,680	76
74+	13.2%	230,565	230,565	30,435	42,608	4,261	38,348	3835	20,580	20,580	272
Prevalence of AMD in ROI/DoH Projected Demographic Effect on Health Service Costs in 2015.[26]						**7,438**	**66,943**	**6695**	**62,160**	**40,396**	**399**

Table 6.19: Age-related macular degeneration population

No of Patients		No of New Patients Requiring 8 Injections Per Year 1 & 2	No of Patients Requiring Approx 3 Injections Per Year	Number of Patient Injections Per Year	No of Hours of Intervention Per Year Per Ophthalmologist	No of Weeks of Input Per Ophthalmologist	Ophthalmologist WTE Requirement	No of Hours of Intervention Per Year Per Optometrist	No of Weeks of Input Per Optometrist	Optometrist WTE Requirement
Wet AMD	7,438	800	7,165	27,895	11,158	302	**7.18**	6,372	172	**4.10**
Dry AMD	6,694	0	0	0	1,339	36	**0.86**	2,678	72	**1.72**
15% DNA Rate							**1.21**			**0.87**
							9.25			**6.69**

Table 6.20: Number of people with age related macular degeneration requiring treatment per year

Total WTE Required for Intervention	
Optometrist	6.70
Ophthalmologist	9.25
Total	**15.95**

Table 6.21: Total WTE required for age related macular degeneration

6.7.2 Glaucoma Care Pathway

Under the revised model, 80% of glaucoma patients (approx. 27,000 patients) will be managed within the PCET; the remaining 20% will be monitored by their local optometrist or referred to a hospital for specialist treatment (see Figure 6.8). Glaucoma is a medical condition that requires medical management. The following is how these patients will be managed in the future.

The patient is referred to the PCET by their GP or optometrist. Referral criteria will be developed to guide when an optometrist/GP needs to refer the patient to the PCET. The referral is triaged and the initial assessment is completed by a member of the PCET. If nothing abnormal is detected the patient will be discharged. Non surgical cases will be managed by the PCET and surgical cases will be referred to the hospital consultant ophthalmologist. Glaucoma particularly lends itself to co-management between the PCET and hospital ophthalmologists using technology to enable review of patient data in virtual clinics by glaucoma surgeons, without the need to necessarily examine the patient directly.

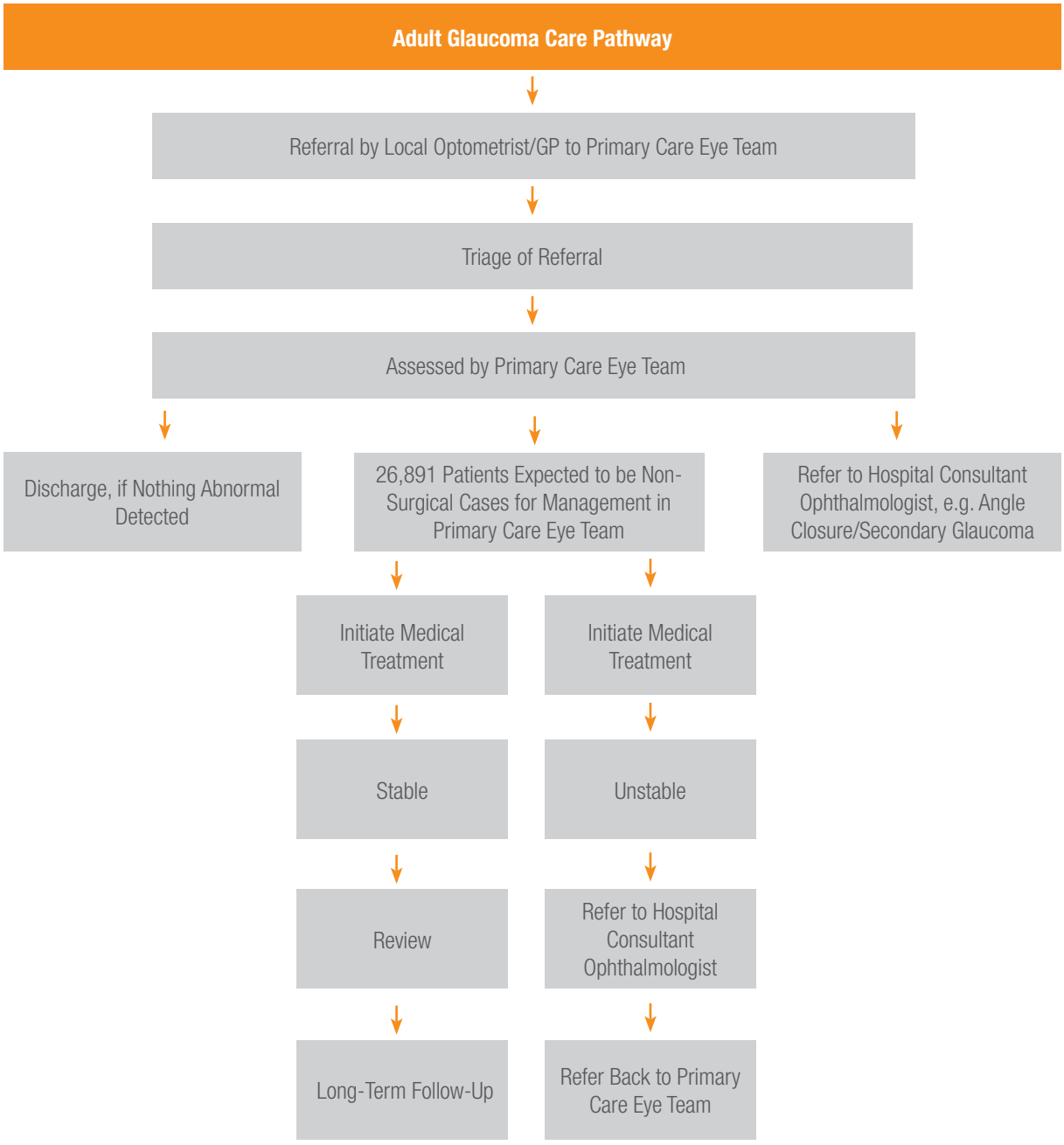


Figure 6.8: Adult glaucoma care pathway

Tables 6.22–6.24 outline the clinical staffing requirement to support the above care pathway.

Age	% Glaucoma	Population	GMS	Glaucoma Population	Glaucoma Pop + 40% Increase in 65+Years by 2021	80% Glaucoma Patients Requiring Regular 6-Monthly PC Review
50–64	1%	786,400	314,560	3,146	3,146	26,981
65–74	2%	352,000	230,440	4,609	6,452	
74+	7%	246,200	246,200	17,234	24,128	
2010 US Prevalence Rates (NEI) .[71]/CSO Data					**33,726**	**26,981**

Table 6.22: Adult Glaucoma population

No. of Patients		No. of Hours of Intervention Per Year Per Ophthalmologist	No. of Weeks of Input Per Ophthalmologist	Ophthalmologist WTE Requirement	No. of Hours of Intervention Per Year Per Optometrist	No. of Weeks of Input Per Optometrist	Optometrist WTE Requirement
Chronic Glaucoma	26,981	10,792	292	**6.94**	10,792	292	**6.94**
15% DNA Rate				**1.04**			**1.04**
TOTAL				**7.98**			**7.98**

Table 6.23: Number of adults will glaucoma requiring treatment per year

Staff	WTE
Optometrist	7.99
Ophthalmologist	7.99
Total	**15.97**

Table 6.24: Total WTE required for Adult Glaucoma

6.7.3 Cataract Care Pathway

In a change from previous arrangements, the pre and post operative management of cataract patients will be completed by the PCET. The following sets out the management of patients presenting with cataract.

The patient will be referred to the PCET by their GP or optometrist. Referral criteria will be developed to guide when an optometrist/GP should refer the patient to the PCET. The referral will then be triaged and the initial assessment will be completed by a member of the PCET. Pre-operative assessments will be conducted by the PCET and the patient will be waitlisted directly for cataract surgery, as appropriate. The patient will be reviewed post-operatively by the PCET and will be discharged to their local optometrist for the provision of new glasses, as required. In cases where surgery for the 2nd eye is required, the patient will be similarly managed.

If surgery is not indicated, the patient will be discharged to their local optometrist for ongoing management.

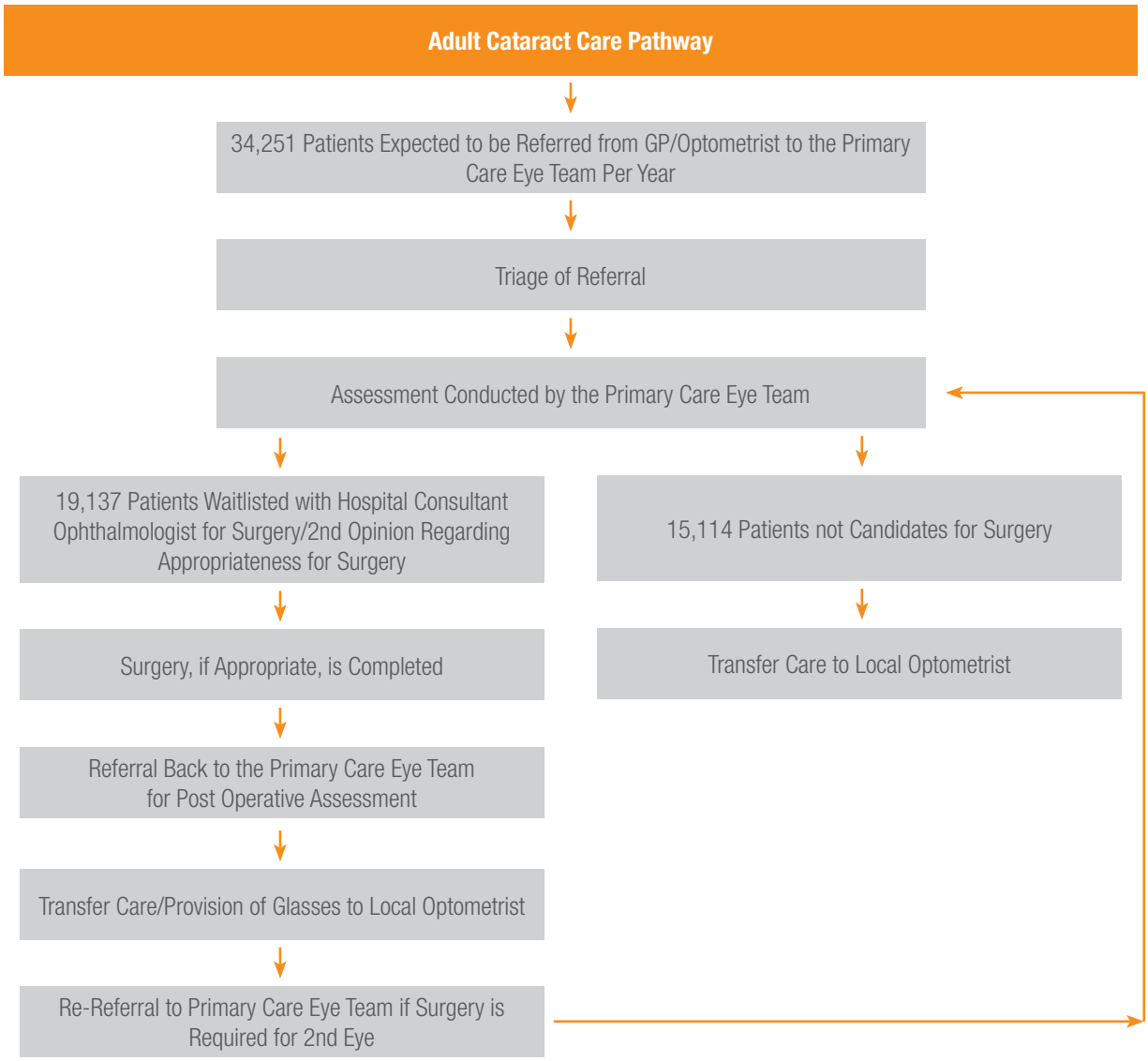


Figure 6.9 Cataract Care Pathway

Tables 6.25–6.27 outline the clinical staffing requirements to support the above care pathway.

Age	% Cataract	Population	GMS	Cataract Pop.	Cataract Pop. + 50% Increase in 65+ Years by 2021	Estimated No. of Patients Requiring Cataract Surgery by 2021	0.05% of Other Patients Requiring Consultation
50–64	10%	737,694	295,078	29,213	31,141	19,137	15,114
65–74	30.60%	304,828	146,927	44,960	67,440		
74+	58.9%	230,565	230,565	135,803	203,704		
2010 US Prevalence Rates (NEI).[71]/HIPE Data/CSO Data					**302,285**		

Table 6.25: Adult cataract population

No. of Patients		No. of Hours of Intervention Per Year Per Ophthalmologist	No. of Weeks of Input Per Ophthalmologist	Ophthalmologist WTE Requirement	No. of Hours of Intervention Per Year Per Optometrist	No. of Weeks of Input Per Optometrist	Optometrist WTE Requirement
Surgical Cataract	19,137	7655	207	**4.93**	7,655	207	**4.93**
Consult Cataract	15,114	6046	163	**3.89**	6,046	163	**3.89**
15% DNA Rate				**1.32**			**1.32**
Total				**10.14**			**10.14**

Table 6.26: Number of adults with cataract requiring treatment per year

Staff	WTE
Optometrist	10.14
Ophthalmologist	10.14
Total	**20.28**

Table 6.27: Total WTE required for cataract

6.7.4 Neuro-Ophthalmology Care Pathway

The majority of patients with neuro-ophthalmology conditions will need to be managed in a specialist hospital setting as many of these conditions are symptoms of a more complex underlying condition (see Figure 6.10). Some patients may initially present to the PCET for assessment and then onward referral. Other patients may be discharged from the hospital setting to the PCET for ongoing monitoring or intervention. While the more acute elements of their care will be managed in a hospital setting, these patients will be also be assessed and managed by the PCET, as appropriate.

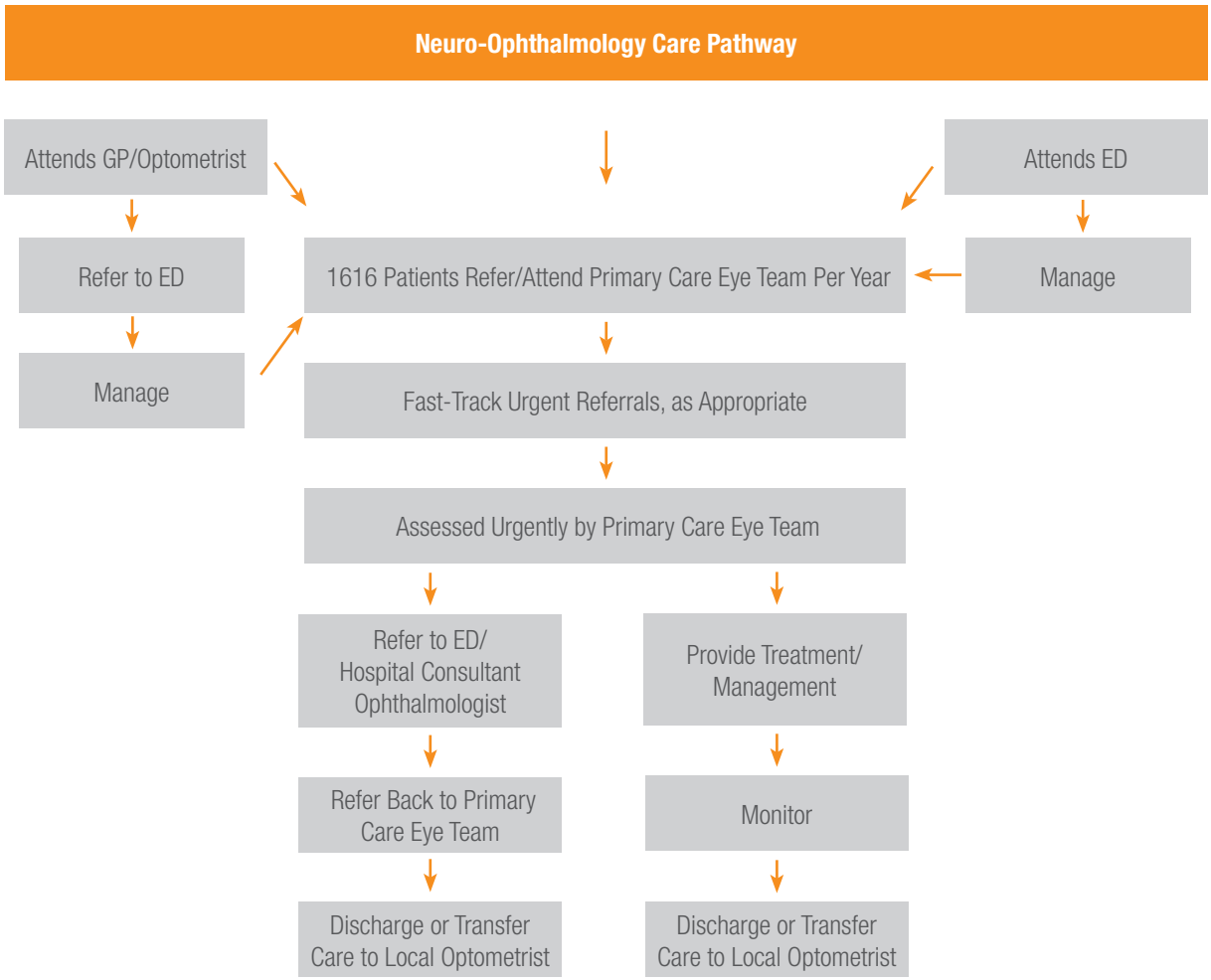


Figure 6.10: Adult Neuro-ophthalmology care pathway

Tables 6.28-6.30 outline the clinical staffing requirement to support the above care pathway.

Population	GMS	Prevalence Rate of 4%	New Population Per Year Per Age Group + 40%	GMS	New Cases Per Year
786,400	314,560	12,582	25,340	10,136	405.44
352,000	230,440	9,218	16,240	9,680	387.2
246,200	246,200	9,848	20,580	20,580	823.2
Prevalence Rates .[72]			**62,160**	**40,396**	**1,616**

Table 6.28: Adult Neuro-ophthalmology population

Neuro-Ophthalmology Workforce Planning Estimates									
No. of Patients	No. of Hours of Intervention Per Year Per Ophthalmologist	No. of Weeks of Input Per Ophthalmologist	Ophthalmologist WTE Requirement	No. of Hours of Intervention Per Year Per Optometrist	No. of Weeks of Input Per Optometrist	Optometrist WTE Requirement	No. of Hours of Intervention Per Year Per Orthoptist	No. of Weeks of Input Per Optometrist	Orthoptist WTE Requirement
1,616	808	22	**0.52**	808	22	**0.52**	808	22	**0.52**
15% DNA Rate			**0.08**			**0.08**			**0.08**
Total			**0.60**			**0.60**			**0.60**

Table 6.29: Number of Adults with ophthalmology conditions requiring treatment per year

Staff	WTE
Optometrist	0.60
Ophthalmologist	0.60
Orthoptist	0.60
Total	**1.80**

Table 6.30: Total WTE required for neuro-ophthalmology

6.7.5 Adult Minor Injury/Corneal Foreign Body/Sore Eye Care Pathway

One of the major features of the PCET will be the provision of care for minor injuries, corneal foreign bodies and acute sore eye in the primary care setting. It is estimated that up to 15,000 such patients who are currently treated in hospitals or by the pilot COSMTS will be treated by the PCETs. This cohort includes adults who schedule appointments as well as those who 'walk in' to access a more immediate service.

The following describes the management process for this cohort of patients (see Figure 6.11). Patients should be referred to the PCET by their GP or optometrist for assessment and treatment. Assessment will be completed by the PCET and treatment given if necessary. The patient will be discharged once treatment is complete.

In urgent cases patients will be seen immediately and assessed by any available, appropriate team member. If the patient has a serious injury/condition, they will be referred to the acute services.

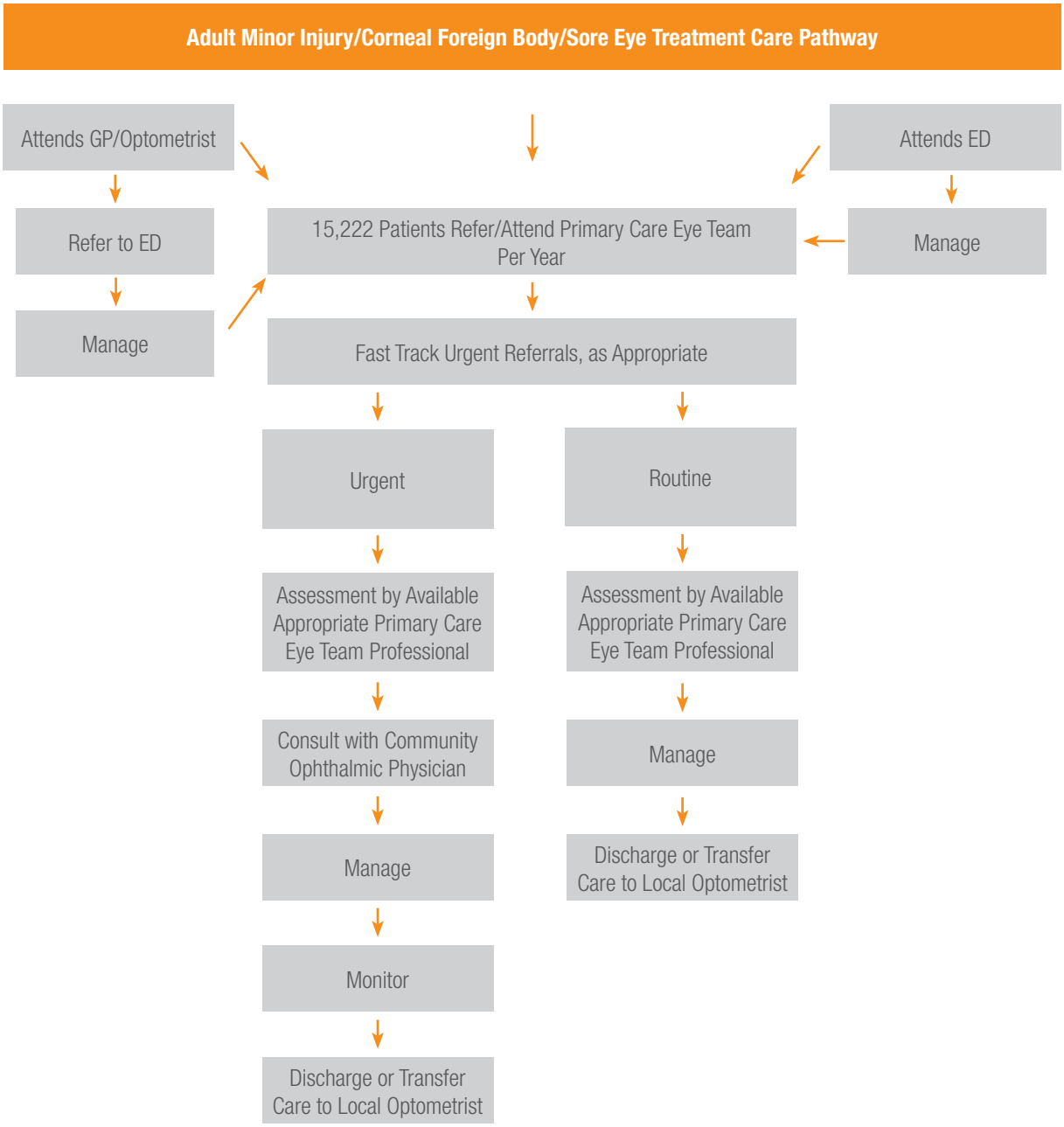


Figure 6.11: Adult minor injury/corneal foreign body/sore eye treatment care pathway

Tables 6.31- 6.33 outline the clinical staffing requirements to support the above care pathway.

Numbers Presenting to the RVEEH PA	Numbers Extrapolated Nationally	GMS
12,685	38,055	15,222

Table 6.31: Adult minor injury/corneal foreign body/sore eye treatment population

No. of Patients	No. of Hours of Intervention Per Year Per Ophthalmologist	No. of Weeks of Input Per Ophthalmologist	Ophthalmologist WTE Requirement	No. of Hours of Intervention Per Year Per Optometrist	No. of Weeks of Input Per Optometrist	Optometrist WTE Requirement
15,222	9133	247	**5.88**	9133	247	**5.88**
15% DNA Rate			**0.88**			**0.88**
			6.76			**6.76**

Table 6.32: Number of adults with minor injury/corneal foreign body/sore eye requiring treatment per year

Staff	WTE
Optometrist	6.76
Ophthalmologist	6.76
Total	**13.52**

Table 6.33: Total WTE required for adult minor injurt/corneal foreign body/sore eye treatment

6.8 Workforce Planning

As earlier evidenced, this report sets out large-scale change in the way eye services will be provided in Ireland. While the emphasis is on providing accessible services in primary care, there is a huge consequential positive impact on acute ophthalmology services. This report outlines innovative responses to existing service challenges and sets out a clear rationale for highly accessible, cost-effective services that will be sustainable and respond to existing and future challenges. In prescribing the future model consideration has been given to projected population growth and demographic trends.

The scale of change incorporates several elements, most notably

- a shift from existing workload in hospitals to primary care;
- the establishment of PCETs, incorporating the inclusion of optometrists and technicians;
- the design and development of care pathways;
- the introduction of new team-work arrangements and ways of working;
- the creation of new clinical and business governance arrangements;
- the prescription of required training programmes;
- the provision of a quality assurance and performance management system;
- the determination of the resources required, including staff, equipment and IT infrastructure.

The adequate staffing of the PCET, incorporating existing and new staff, will be central to the successful implementation of this model.

The scale of the proposed change, as now articulated, will need existing staff and new staff to work together in PCETs to deliver a new primary care eye service. The PCETs will work according to the care pathways for the populations they

serve in ensuring that a first-class service is provided to all patients. The creation of these new PCETs and the new ways of working required detailed planning for staffing, equipment and infrastructure.

In relation to workforce planning, a substantial workforce planning exercise was conducted for the major paediatric and adult conditions that will present to the newly established PCETs. The detailed breakdown was provided alongside each of the relevant care pathways earlier in this chapter and the summary workforce planning breakdown is as set out in tables 6.34 and 6.35.

Tables 6.34 and 6.35 which outline the national total of staffing requirements as per the PCET model. This includes existing and future posts. The key information from these tables is:

- An overall requirement for 144 additional posts, approximately 16 posts per CHO, to support the transfer of approximately 60% of OPD eye services activity to primary care. These are patients who are currently receiving their care in the hospital setting but can receive their care in the community setting once the appropriate facilities and staffing are available.
- Introduction of optometrists and technicians to be directly employed by the HSE as part of the PCETs.
- Creation of a Community Ophthalmic Physician Lead for each CHO. These lead posts will be subject to the usual processes to agree remuneration and working terms and conditions relevant to the responsibilities of the post.

Notes:

1. Workforce planning estimates are based on all staff being available to work 42 weeks per year (10 weeks is allocated to annual leave, study leave, MDT meetings, supervision, etc), staff working 37 hours per week and a maximum DNA rate of 15%.
2. Standardised scheduling and appointment times will need to be agreed across all CHOs to ensure efficient use of WTE resource, e.g. the preschool surveillance and the school vision screening care pathways allocate 21 minutes per optometrist, 21 minutes per orthoptist, and 6 minutes per community ophthalmic physician for each child assessed. Any deviation from these recommended lengths of appointments with each team member will impact on WTE requirements.
3. The workforce planning estimates are based on one PCET, based at a centre of excellence; any provision of outreach services from the centre may increase WTE requirements. The community ophthalmic physician, the orthoptist and the optometrist will need to be present at an outreach clinic for the initial assessment of all patients. As detailed above, the community ophthalmic physician has less time allocated per patient so their remaining time will need to be allocated to other activities/clinical duties.
4. The orthoptist and optometrist WTEs for the adult service may be interchangeable, depending on the availability of staff for posts.
5. The grading of posts may be modified as implementation progresses and the detail of staff roles are further agreed.
6. An assumption has been made that 26.77 community ophthalmic physician WTEs, 10.29 orthoptist WTEs, 9 administration staff WTEs, and 9 staff nurse WTEs will come from existing WTEs.

Position	WTE	Midpoint of Payscale	PRSI (10.75%)	Non-Pay Costs (10%)	Total Cost
*Lead Clinician	9	€84,495	€9,083	€8,450	€918,249
Community Ophthalmic Physician	50	€84,495	€9,083	€8,450	€5,147,298
Orthoptist	32	€55,750	€5,993	€5,575	€2,170,336
Optometrist	63	€55,750	€5,993	€5,575	€4,230,271
Staff Nurse	18	€34,814	€3,743	€3,481	€756,682
Technician	9	€27,498	€2,956	€2,750	€298,835
Administration Grade III	18	€33,596	€3,612	€3,360	€730,209
Total Pay Costs	**199**				**€14,251,880**

Table 6.34: Primary care eye teams overall WTE requirements

The number of new posts (net of existing primary care posts) required is summarised as follows:

Position	WTE	Midpoint of Payscale	PRSI (10.75%)	Non-Pay Costs (10%)	Totals
*Lead Clinician	9	€84,495	€9,083	€8,450	€918,249
Community Ophthalmic Physician	24	€84,495	€9,083	€8,450	€2,416,016
Orthoptist	22	€55,750	€5,993	€5,575	€1,477,633
Optometrist	63	€55,750	€5,993	€5,575	€4,230,271
Staff Nurse	9	€34,814	€3,743	€3,481	€378,341
Technician	9	€27,498	€2,956	€2,750	€298,835
Administration Grade III	9	€3,596	€,612	€3,360	€365,105
Total Pay Costs	**145**				**€10,084,450**

Table 6.35: Primary care eye teams new WTE requirements

**Lead Clinician: For the purposes of this report, the lead posts have been costed at the existing salary for the community ophthalmic physician; however, as the report is being implemented, these posts will be subject to the usual processes to agree remuneration and working terms and conditions relevant to the responsibilities of the post.*

A detailed breakdown of the additional WTEs required per CHO is included in the accompanying Implementation Plan.

6.9 Capital, Equipment and Consumable Requirements

The current infrastructure for the delivery of primary care eye services is inadequate and will require significant investment to be able to deliver the shift of workload from acute services to primary care by accommodating the PCETs in fit-for-purpose premises. While existing premises are in many cases substandard, the inventory of existing ophthalmic equipment is extremely limited and presents challenges in effective assessment, diagnosis and treatment of patients. This is all the more pronounced when assessing the capability of existing resources to address the planned future workload. As previously outlined, the scale of work and the addition of new teams will require specialised equipment to provide the new range of services and this equipment should be suitably accommodated in premises that will reflect the ambition of the programme of work to meet patient needs.

The PCETs will be based in a primary care setting, ideally co-located with other services, where possible in primary care centres. A full schedule of accommodation and required equipment has been determined which is detailed in Tables 6.36–6.45 below. Some CHOs may have less capital requirements as they may have existing buildings/ infrastructure that can be allocated to the PCET. A detailed plan for capital expenditure will be developed in the implementation phase with the Chief Officers of the CHOs.

Table 6.37 highlights that circa €1.5 million in capital cost will be required per centre of excellence, excluding the cost of purchasing a site if required.

Accommodation Requirements:
Tables 6.36 and 6.37 provide an overview of the number of rooms, space and capital costs per centre of excellence per CHO.

Type of Room	No. of Rooms	Other Areas Required	No. of Areas
Clinic room	15	Male/Female toilets	1
Storage room	1	Paediatric waiting area	1
Procedure room	1	Adult waiting area	1
Laser room	1	Reception	1
Testing room	1		
Fields room	1		
Total number of rooms	**20**	**Total Number of Areas**	**4**

Table 6.36: Overview of capital requirements per CHO

Type of Room	No. of Rooms/ Areas	Square Metre	Square Foot	Fully Fitted at €24 per Square Foot	Construction Cost at €420 per Square Foot
Clinic room	15	156	1,936	€46,464	€814,380
Storage room	1	18	194	€4,650	€81,375
Procedure room	1	15	161	€3,875	€67,813
Laser room	1	15	161	€3,875	€67,813
Testing room	1	15	161	€3,875	€67,813
Fields room	1	15	161	€3,875	€67,813
Male/Female toilets	1	28	301	€7,233	€126,584
Paediatric waiting area	1	20	215	€5,167	€90,417
Adult waiting area	1	25	269	€6,458	€113,021
Reception	1	20	215	€5,167	€90,417
Total	**24**			**€84,475**	**€1,587,444**

Table 6.37: Capital requirements per CHO

Paediatric Equipment & Consumables:

Table 6.38 summarises the paediatric equipment requirements per CHO. The majority of the paediatric equipment is portable which facilitates the operation of outreach clinics by the PCET; if required.

	Equipment Type	Professional User	Quantity Per PCET	Total Cost Incl. VAT
1	Keeler Professional Retinoscope & Ophthalmoscope Set	Optometrist/Ophthalmologist	5	€12,293.85
2	Charger for ophthalmoscope and retinoscope	Optometrist/Ophthalmologist	5	€2,189.40
3	Keeler Vantage Indirect Ophthalmoscope	Optometrist/Ophthalmologist	2	€9,520.82
4	20D Lens	Optometrist/Ophthalmologist	2	€495.42
5	Set of trial lenses and trial frame	All	5	€13,407.00
6	Humphrey Field Analyser	All	1	€14,760.00
7	Kay pictures	All	5	€337.02
8	Lea symbols	All	5	€505.53
9	Targets	All	5	€252.77
10	Colour vision Ishihara plates	All	7	€1,769.36
11	Prism bar (pair)	All	5	€4,212.75
12	Retinoscopy lens paddle	All	5	€1,727.23
13	Focimeter/Lensmeter	All	7	€17,220.00
14	PC/EPR/Licences/Colour Laser Printer/MS Office, etc.	All		ICT
15	Corneal topography machine	All	1	€13,407.00
16	Autorefractor	All	1	€6,765.00
17	Hess/Lees Chart	Orthoptist/Optometrist	1	€2,022.12
18	Synoptophore	Orthoptist	1	€13,480.80
19	Box of loose prisms (18–20 pieces)	Orthoptist/Optometrist	5	€4,212.75
20	Thompson Lenovo acuity test – LogMar/Maddox/Worth Four Dot Test	All	7	€35,387.10
21	Crowded Kay Picture Test	Orthoptist/Optometrist	7	€1,248.45
22	Cardiff cards/Teller acuity cards	Orthoptist/Optometrist	7	€8,610
23	Maddox Wing	Orthoptist/Optometrist	5	€758.30
24	Bagolini lenses	Orthoptist/Optometrist	5	€1,095.32
25	Filters for Worth Four Dot (possibly included in trial lens set)	Orthoptist/Optometrist	5	€252.77
26	Sbisa bar	Orthoptist/Optometrist	5	€2,232.76
27	RAF rule	Orthoptist/Optometrist	5	€758.30
28	Stereo tests at least 2 of Wirt, Lang, TNO, Frisby	Orthoptist/Optometrist	5	€3,075.00
29	OKN drum	Orthoptist/Optometrist	1	€235.91
30	Paediatric occlusion glasses	All	5	€123.00
Total				**€172,355.69**

Table 6.38: Paediatric equipment requirements per CHO

Paediatric Equipment

Annual Service Costs:

Table 6.39 summarises the expected annual service contract costs for paediatric equipment per CHO.

	Equipment	Quantity	Total Equipment Cost Incl. VAT	Service Cost @10% Incl. VAT
1	Keeler Professional Retinoscope & Ophthalmoscope Set	5	€12,293.85	€1,229.39
2	Keeler Vantage Indirect Ophthalmoscope	2	€9,520.82	€952.08
3	Field Screener (Humphreys)	1	€14,760.00	€1,476.00
4	Corneal topography machine	1	€13,407.00	€1,340.70
5	Autorefractor	1	€6,765.00	€676.50
6	Synoptophore	1	€13,480.80	€1,348.08
Total				**€7,022.75**

Table 6.39: Average paediatric annual service contract costs per CHO

Annual Paediatric Consumable Costs

Table 6.40 summarises the expected annual average consumable costs for paediatric services per CHO. A detailed breakdown per CHO is available in the Implementation Plan.

	Type	Number	Cost	Total Cost Incl. VAT
1	Consumables for taking samples/blood, etc.	2,000.00	€5	€12,300
2	Consumables for carrying out procedures	2,000.00	€20	€49,200
Total				**€61,500**

Table 6.40: Average paediatric consumable costs per CHO

Adult Equipment & Consumables:
Adult Equipment

Table 6.41 summarises the adult equipment requirements per CHO. The majority of the adult equipment is not portable therefore, patients will need to attend the PCET centre of excellence for complete assessment/treatment.

	Equipment Type (In Addition to Paediatric Equipment)	Professional User	Quantity Per PCET	Total Incl. VAT
1	Optical coherence tomography (OCT)	All	1	€80,884.80
2	Fundus photography camera & fluorescein angiography and PC/image management software	All	1	€56,580.00
3	YAG laser machine	Ophthalmologist	1	€71,309.25
4	Argon retinal laser machine	Ophthalmologist	1	€75,829.50
5	Oculus adult trial frame	All	3	€2,274.89
6	Hand-held slit lamp for children/wheelchair bound	Ophthalmologist/Optometrist	1	€1,537.50
7	Hand-held tonometer – Perkins	Ophthalmologist/Optometrist	1	€1,685.10
8	Pachmate Pachymeter	Ophthalmologist/Optometrist	1	€2,453.85
9	Disc Camera Kowa + dicom reader licence to share images between PCs	Ophthalmologist/Optometrist	1	€49,628.04
10	Biometry IOL Master 700	Ophthalmologist/Optometrist	1	€43,050.00
11	Slit lamp for adults	Ophthalmologist/Optometrist	2	€48,251.79
12	Forum software license (Zeiss)	Ophthalmologist/Optometrist	1	€61,500.00
13	Goldmann tonometer prisms (for use with Goldmann tonometer/ Perkins tonometer) + holder for sterilisation	Ophthalmologist/Optometrist	5	€707.25
14	Goldman tonometer attachment for Haag-Streit slit lamp	Ophthalmologist/Optometrist	5	€7,995.00
15	90D Volk lens	Optometrist/Ophthalmologist	5	€1,390.21
16	78D Volk lens	Optometrist/Ophthalmologist	5	€1,390.21
17	66D Volk lens	Optometrist/Ophthalmologist	5	€1,390.21
18	3 Mirror lens	Ophthalmologist	5	€5,055.30
19	4 Mirror non-coupling indenting gonioscope	Ophthalmologist	5	€8,425.50
Total				**€521,338.39**

Table 6.41: Adult equipment requirements per CHO

Adult Equipment Annual Service Costs

Table 6.42 summarises the expected service contract costs per adult service per CHO.

	Equipment	Quantity	Total Equipment Cost Incl. VAT	Service Cost @10% Incl. VAT
1	OCT (all OCT)	1	€80,884.80	€8,088.48
2	Fundus photography camera & fluorescein angiography and PC/image management software	1	€56,580.00	€5,658.00
3	YAG laser machine	1	€71,309.25	€7,130.93
4	Argon retinal laser machine	1	€75,829.50	€7,582.95
5	Disc Camera Kowa + dicom reader licence to share images between PCs	1	€49,628.04	€4,962.80
6	Biometry IOL Master 700	1	€43,050.00	€4,305.00
7	Slit lamp for adults	2	€48,251.79	€4,825.18
8	Forum software licence (Zeiss)	1	€61,500.00	€6,150.00
Total				**€48,703.34**

Table 6.42: Adult annual service contract costs per CHO

AMD Injection Costs

The management of AMD and other conditions by the PCET will have understandable revenue implications, one being the cost of providing injections for the treatment for AMD.

Table 6.43 summarises the expected average costs per CHO to provide injections for the treatment of AMD current funding for these injections for the management of AMD is provided by local hospitals. A detailed breakdown of projected costs per CHO is included in the Implementation Plan.

Number of Injections Per Year	Cost	Total Cost Incl. VAT	Average Cost per CHO Inc of VAT
32,317	€100	€3,667,980	**€407,553**

Table 6.43: Adult costs of injections for treatment of AMD per CHO

Adult Annual Consumable Costs:

Table 6.44 summarises the expected average consumable costs per adult service per CHO. A detailed breakdown of costs per CHO is included in the Implementation Plan.

	Type	Number	Cost	Total Cost	Average Cost per CHO Incl. VAT
1	Consumables for taking samples/blood, etc.	15,222.00	€5	€76,110	€8,457.00
2	Consumables for carrying out procedures	15,222.00	€20	€304,440	€33,826.67
Total				**€380,550**	**€42,283**

Table 6.44: Adult consumable costs per CHO

As stated above, the current eye care services have very limited paediatric and adult equipment. A national procurement process will need to be undertaken to attain best value for money, standardisation and optimum quality for all equipment and consumables. All equipment will require servicing and upgrading, as per manufacturer recommendations.

6.10 Summary of Average New Funding Requirements per CHO

Table 6.45 sets out a summary of the average PCET funding requirements per CHO. This summarises the detail provided above on a CHO basis. PCET set-up costs are high but once established they will result in the capacity to transfer 60% of outpatient care from the hospital setting to the primary care setting and ensure that all eligible children and adults receive a high-quality service and increase prevention of unnecessary blindness.

	Recurrent Expenditure	Capital Expenditure
New WTEs	€1,120,494	
Building costs		€1,587,444
Equipping		€693,694
Service contracts	€55,726	
Consumables/Injections	€511,336	
Total	**€1,687,556**	**€2,281,138**

Table 6.45: Summary of average new funding requirements per CHO

6.11 Contractual Arrangements and the Primary Care Reimbursement Service

The current COSS arrangements require amending to allow children over the age of 8 years (and some children aged under 8 years, at the discretion of their PCET) to be discharged to their local optometrist for biennial review and provision of glasses and to allow for the provision of checks for certain adult patients with glaucoma, cataract and dry AMD.

A new contract will need to be negotiated for the provision of eye care to adults in nursing homes and residential settings.

The COSS, the pilot COSMTS and other options will be reviewed, in line with a quality assurance framework, to enable purchasing capacity to address waiting lists as the PCETs are being established.

PCRS will require an estimated increased funding of €8 million to cover the costs of the additional services outlined above.

A National Clinical Advisory Group will need to be established to provide governance for these contracts/service level agreements. This will include random auditing of care provided to patients to ensure that appropriate care is provided and represents value for money. The Group will work closely with CHOs and be responsible for ensuring that high standards of care are maintained and that all activity is necessary and within expected levels. All providers working within the schemes will be expected to return data on agreed patient activity and outcomes.

Currently, all approvals for the COSS are conducted at a local level with some areas having funding directly provided by the PCRS. This review recommends that an online IT system is developed to allow all approvals and management of contracts/service level agreements/queries be conducted at a local level, according to consistent protocols/templates and within consistent timeframes. Reimbursement for all COSS payments should be made via the PCRS and the IT online system will allow the matching of requests to approvals and payments.

In order for the PCRS to support all payments nationally they may require additional administration staff and any relevant local ophthalmic budgets should transfer to it to bring about this standard national system. The online IT system combined with the PCRS central approach will facilitate greater efficiency, enable better local management of services and provide better governance.

The National Clinical Advisory Group will agree a national approach to the provision and funding of non-standardised optical items, which will be approved locally and reimbursed via PCRS.

The provision of aids and appliances will be reviewed under the Primary Care Community Funded Schemes Programme in liaison with the National Clinical Advisory Group. A procurement process should be held to select preferred providers for these devices and the lead community ophthalmic physicians in each CHO should ensure audit of the provision of devices by the preferred provider is undertaken.

6.12 Primary Care Eye Services Clinical Patient Management System (PCESCPMS)

Fundamental to having a quality primary care eye care service is the procurement and rollout of a national PCESCPMS that will enable effective planning, monitoring of performance (coverage, referral rates, outcomes etc.), assuring quality and managing risks. This needs to be developed within a national framework and to integrate with acute care systems as well as future systems, such as a child health information system and/or a primary care PMS. The PCESCPMS will allow all professionals to track patients along specified care pathways, utilise specific ophthalmic clinical modules and facilitate the collation of metrics/patient feedback, sending of reports and the conducting of research and audit. The PCESCPMS will remove referrals of the same patients to multiple sites. It will also provide validation of patient information; this will help manage the did not attends/cannot attends (DNAs/CNAs), thus reducing waiting lists. The system should facilitate the provision of electronic referrals in line with the eHealth agenda.

6.13 Communications

The introduction of the reform of primary care eye services will need to be managed carefully and effective communications will be essential to ensure that stakeholders are appraised of the main tenets and relevant details of the reform. The implementation should be accompanied by a detailed Communications Strategy that will set out the principal elements of the reform, detailing what information should be provided by whom to what audience, how, when and where. The Communications Stratagy should be sequenced and should have national and local applicability. It should have targeted messages at key stakeholders, such as patients, clinicians and health service managers.

Report Standardisation

It is evident from the work of the PCESRG that there are many operational communication deficiencies obvious in the different referral and report forms in usage across the country and a clear absence of protocols in relation to standard communication processes. These shortcomings will need to be addressed by the introduction of a suite of standard templates, reports and communication protocols and all components of the PMS.

Standardised templates for conducting visual assessments/surveillance on children and adults will be used across the eye care services. This will include templates for the newborn check and 6-week check which are conducted within the hospital and GP practices. The national PMS will facilitate the use of agreed standard templates only. Standard templates will also be developed for patient reports which will be shared promptly with all relevant team members via the PMS. Summary test reports will issue to parents if their child fails the school vision screen indicating the outcome and also the need for a follow-up via a referral to the PCET. Standardised leaflets will be given to each child that passes the school vision screen with information on the result and guidance on maintaining eye health. Standardised referral criteria will be agreed and implemented with local optometrists and GPs, so there will be clarity on appropriate referrals of children and adults to the PCET.

Clear information will be made available via printed leaflets, promotional material, social media, the HSE website, etc. regarding eye conditions, health promotion, access to eye services, screening programmes and eligibility.

6.14 Health Promotion

There will be regular HSE campaigns to alert the population to the importance of maintaining their eye health including the following steps (courtesy of the Irish College of Ophthalmologists):

Lifestyle Habits:

- ***Exercise*** lack of exercise contributes significantly to several eye conditions, particularly among people aged 60 and over. Exercise may reduce the risk of sight loss from narrowing or hardening of the arteries, high blood pressure and diabetes.
- ***Outdoor play*** outdoor play for children is strongly associated with a reduced risk of developing myopia.
- ***Alcohol*** excessive alcohol consumption can lead to serious health conditions which can have a detrimental effect on eye health.
- ***Smoking*** after ageing, smoking is the biggest risk factor for developing macular degeneration. Smoking also increases the risk of developing cataract.

Diet – Eat the Right Foods

- Studies show that what people eat can affect their vision. Certain foods are particularly high in antioxidants which can help to prevent retinal damage and certain eye conditions like cataracts and AMD. A beneficial antioxidant, lutein, is found in many fruit and vegetables.

Family Eye Health History

- Certain eye conditions can be hereditary, such as glaucoma. When detected early, it can be treated and controlled and therefore it is very beneficial for people to know if this condition has been in their family so that they can be tested. 'the common eye disorders e.g. cataract, macular degeneration and glaucoma are largely age related and it is recommended that people be checked over the age of 50 for these conditions'

Care in the Sun

- Wearing sunglasses reduces the risks of damaging the eyes as a result of the strong ultraviolet light from the sun's rays. Check that sunglasses have a UV factor and carry the CE mark which indicates that they meet European safety standards.

Diabetics

- People who have diabetes are at risk of developing a condition called diabetic retinopathy; the Diabetic Retinopathy Screening programme screens their vision and it is important for affected people to make avail of this screening.

Computer Screen Breaks

- It is very important to take frequent breaks from the computer screen, at least once an hour to allow your eyes to rest. This will help to avoid problems such as eye strain, lack of focus, and headaches. If a person has long documents to read, it is preferential to print them off to read them alongside the computer.

Eye Exams

- The common eye disorders, e.g. cataract, macular degeneration and glaucoma, are largely age related and it is recommended that people be checked over the age of 50 for these conditions.
- In general, changing glasses is not indicated unless the current glasses are unsatisfactory'.

6.15 Roadmap for Implementation

It is the responsibility of each CHO Chief Officer to implement the recommendations of the report in their respective areas. A Project Manager and Clinical Lead will be employed from 2017 to 2019 to support the Chief Officers with implementation, to ensure consistency of implementation across the CHOs and to oversee the implementation of national actions, e.g. the procurement of an ICT system and the agreement of national standard operating procedures. Their appointments will be funded via time-related savings from the recruitment of the additional WTEs to the Primary Care Eye Teams . The National Clinical Lead and Project Manager will work closely with the National Clinical Programme for Eye Care. The main implementation phase will run from Q4 of 2017 until Q4 of 2019.

A detailed implementation plan has been prepared to support this document. It describes the specific tasks that the Chief Officers and the Project Manager/National Clinical Lead will need to complete over the three-year implementation timeframe. It also provides specific information regarding the WTEs and funding to be assigned per CHO.

6.16 Solutions Implemented in 2015–2016

As per the terms of reference for the PCESRG to put in place an action plan to address immediate primary care paediatric eye services issues in the Dublin area, the Primary Care Division funded waiting list initiatives in Dublin North, Kildare/West Wicklow and the Royal Victoria Eye and Ear Hospital in 2015 with over 2,750 additional children seen. The Primary Care Division is working with CHO 6, CHO 7, CHO 9, Temple Street Children's University Hospital, and Our Lady's Children's Hospital, Crumlin, to agree the funding of waiting list initiatives in early 2017.

In order to ensure that only children with visual defects are referred to the PCET from school vision screening, the Primary Care Division in liaison with the Health and Wellbeing Division has agreed a standard operating procedure for the provision of school vision screening and arranged relevant training for PHNs in Q4 of 2016.

6.17 Summary

PCESRG's vision for eye care services delivered by the HSE in Ireland is of a high-quality, safe, effective and efficient service, meeting and responding to the changing needs of those of all ages, with actual or suspected ocular pathology. The recommendations of the group will lead to the development of a service that will be accessible without undue or unnecessary delay and as far as possible be geographically convenient. It will offer clear and accurate information upon which patients (or carers) can exercise their rights to make informed choices and it will result in a high level of patient (or carer) satisfaction. The service will be staffed by a well-trained, dedicated, caring and competent workforce with good governance and accountability, providing clinical leadership at both national and community levels committed to an evidence-based and evaluative service.

7.0 SUMMARY OF RECOMMENDATIONS

No.	Recommendation	Alignment to Most Relevant HSE Corporate Goal[72]
Goal 1: Promote health and wellbeing as part of everything we do so that people are healthier.		
Goal 2: Provide fair, equitable, and timely access to quality, safe health services that people need.		
Goal 3: Foster a culture that is honest, compassionate, transparent and accountable.		
Goal 4: Engage, develop and value our workforce to deliver the best possible care and services to the people who depend on them.		
Goal 5: Manage resources in a way that delivers best health outcomes, improves people's experience of using the service and demonstrates value for money.		
Primary Care Eye Team (PCET)		
1	One PCET will be established per CHO; limited outreach services may be provided, as required.	Goals 2 & 4
2	The PCET will be staffed with optometrists, orthoptists, nurses, technicians, community ophthalmic physicians and a community ophthalmic physician lead.	Goals 2 & 4
3	Skill mix will be utilised to ensure that the most appropriate staff member sees the patient.	Goals 2 & 4
Governance		
4	A community ophthalmic physician lead will provide overall clinical governance for eye services within a CHO (HSE and contracted services).	Goals 2, 3 & 5
5	Each community ophthalmic physician lead will report into their relevant CHO Chief Officer.	Goals 2, 3 & 5
6	Each staff member of the PCET will adhere to their professional registration regulations.	Goal 4
Quality Assurance		
7	Each PCET will assure quality of the service provided via clinical registries, audit, agreed KPIs and outcome measures.	Goals 2, 3 & 5
8	Each PCET will seek regular patient feedback.	Goal 3
9	Each PCET will adhere to relevant standards, e.g. HIQA.	Goals 2, 3 & 5
Training		
10	Training in change management, lean processes, writing of standard operating procedures, communication and team working training will be provided to each new PCET.	Goals 3, 4 & 5
11	Each PCET professional will maintain their continuous professional development in accordance with their professional registration guidelines.	Goal 4
12	Student optometrists and orthoptists will attend placements in both acute care and primary care settings.	Goal 4
13	Specific algorithms and training in eye care will be devised for GPs and the staff who conduct newborn eye checks.	Goals 2 & 4
Surveillance and Screening		
14	Eye checks for abnormalities will be conducted at birth and at the 6–8 week check.	Goals 2 & 5
15	Surveillance of vision will be conducted from early checks until school vision screening. This surveillance will be conducted by a PHN observing visual behaviour and asking the parents specific questions.	Goals 2 & 5
16	A child will only be referred from surveillance to a PCET if a visual abnormality is observed or there is a combination of parental concern and history of a first-degree relative with amblyopia and/or strabismus.	Goals 2 & 5
17	The corneal light relex will not be tested at surveillance appointments.	Goals 2 & 5
18	School vision screening will be conducted in Junior Infants by a PHN.	Goals 2 & 5
19	Parents will receive a letter from the PHN if their child has failed the school vision screen and requires follow-up with a PCET.	Goals 2, 3 & 5
20	Future provision of school vision screening may be conducted by technicians with/out new screening technologies.	Goals 2 & 5

21	The school exit and colour vision screen will be discontinued.	Goals 2 & 5
22	Parents/teachers who have concerns about a child's vision after the school vision screen will request the PHN to review the child.	Goals 2 & 5
23	The standardised consent policy for school screening will be reviewed and amended to include guidance for consent for when parents are separated.	Goals 2 & 5
Standardised Work Processes		
24	Each PCET will adhere to the care pathways included in this report and update them, as required, with input from all team members.	Goals 2, 4 & 5
25	A suite of more detailed standard operating procedures will be developed to further standardise work processes, e.g. triage process and school vision screening for PHNs.	Goals 2, 4 & 5
26	Referral criteria will be agreed for GPs and optometrists referrals to the PCET.	Goals 2, 4 & 5
27	A suite of standardised templates will be developed for use by the PCET, e.g. assessment forms, questionnaires, summary reports.	Goals 2, 4 & 5
28	Assessment templates will be developed for the newborn eye abnormality checks.	Goals 2, 4 & 5
29	Standardised content for a national suite of leaflets on eye care and for the HSE website will be developed.	Goals 1, 2, 4 & 5
30	A national policy needs to be developed in line with legislation to detail how eligible children can transition from paediatric to adult eye care services.	Goals 2, 4 & 5
Integrated Care		
31	Approximately 60% of the current adult and paediatric OPD eye care work will transition to the PCETs, once they are established.	Goals 2, 4 & 5
32	More surgical and treatment procedures, e.g. injections for AMD will be provided by the PCET.	Goals 2, 4 & 5
33	Opportunities for hospital consultant ophthalmologists to attend specialist clinics in the PCETs and for community ophthalmic physicians to attend clinics in the hospital setting to promote integrated care provision will be explored.	Goals 2, 4 & 5
Staffing		
34	Appropriate numbers of staffing will be allocated to each PCET, as detailed in Chapter 6 of this report.	Goal 4
Equipping		
35	Appropriate equipping and consumables will be allocated to each PCET, as detailed in Chapter 6 of this report.	Goals 4 & 5
36	Procurement processes will be completed to ensure that high quality equipment is procured reflecting best value for money.	Goals 4 & 5
37	Service contracts will be arranged to ensure that equipment is maintained and calibrated.	Goals 4 & 5
38	The PCETs will be provided with appropriate premises, as outlined in chapter 6 of this Report.	Goals 4 & 5
Contractual Arrangements		
39	The COSS will be reviewed and updated to allow for optometrists to see children aged over 8 years (and some children aged under 8 years, at the discretion of the PCET) and to provide glasses for adults post cataract surgery. The provision of checks for certain adult patients with glaucoma, cataract and dry AMD will also be provided.	Goals 2 & 5
40	A new contract/service level agreement for the provision of eye care services to adults in nursing homes and residential settings will be negociated.	Goals 2 & 5
41	The COSS, COSMTS and other options will be reviewed, in line with a quality assurance framework, to enable purchasing capacity to address waiting lists as the PCETs are being established.	Goals 2 & 5
42	A national clinical advisory group to provide governance for these contracts/service level agreements will be established.	Goals 2, 3 & 5
ICT		
43	A national primary eye care services clinical patient management system will be procured.	Goals 2, 3 & 5
Health Promotion		
44	Standardised content for a national suite of leaflets on health promotion and for the HSE website will be agreed.	Goals 1,2 & 3
HSE (2015). Building a High Quality Health Service for a Healthier Ireland: HSE Corporate Plan 2015-2017.[73]		

Table 7.1: Summary of recommendations

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