Eye Health Workforce Service Review
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Executive Summary

The Eye Health Workforce Service Review commenced in August 2010 and was completed in December 2010. The main aim of the review was to develop a vision of the eye health service and workforce for 2020 in the context of a doubling of eye health service demand but only a 30-40% increase funding. The review was to be completed within a sixteen-week period.

During the sixteen-week period the review group met in two half-day meetings and had a final teleconference; a smaller working group had two teleconferences to progress the work of the review group; the project manager met or phoned review team members to facilitate the different eye health professions’ input into the review and relevant information was sent to the review group to inform discussions.

The patient journey process (as suggested by HWNZ) was used to generate a number of clinical scenarios/pathways that include:

- General referral pathway
- Cataract
- Glaucoma
- Diabetes
- Uveitis
- Macular Degeneration (MD)

A number of eye health service and workforce issues were identified from discussions on the clinical scenarios. Issues related to eye health services include:

- Eye health services in New Zealand are mainly hospital based
- Some hospital eye health services could move to the community
- Consumers often have to wait long periods for hospital appointments and in outpatient clinics waiting to be seen
- Communication and collaboration between hospital and community needs to improve, particularly in the referral process, prioritisation of hospital treatment and the discharge process
- The quality (including access) of eye health services needs to improve e.g. diabetic retinal screening, low vision assessments, child and vision screening
- There is a need for more organisation and integration of eye health services between hospital and community.

Issues related to the eye health workforce include:

- There is currently a more than adequate supply of optometrists with 678 optometrists nationwide and 50 being trained each year
• Optometrists could be better utilised in the assessment, treatment and management of patients with eye health care issues
• There needs to be enhanced use of nurses and general practitioners in eye health services
• There is a need to develop training in eye health care particularly for nurses, GPs, and orthoptists.
• Sufficient numbers of ophthalmologists need to be employed and trained to cater for population growth and the aging population.

The review group’s vision for the eye health service in New Zealand for 2020 is as follows:

Eye health services in New Zealand will be based on need, place the consumer at the centre and integrated at the primary, secondary and tertiary level.

This vision incorporates a community model of eye health care, is focussed on improving the quality of eye health care services, efficiently utilises the different eye health workforces including the development of innovative roles. This vision would be realised through a national network of regional/local eye health managed clinical networks.

As there is currently no eye health managed clinical networks the review group thought it was important to set up one or more pilot demonstration sites that would be evaluated and the learning used to inform the future development of networks.

In moving towards achieving their vision, the review group considered it important to continue to develop eye health services and the eye health workforce.

The review group therefore recommended that:

1. a. That HWNZ supports and funds the establishment of pilot eye health managed clinical networks. The review team suggested three differently sized areas to pilot eye health managed clinical networks in order of priority; Auckland, Porirua and Christchurch

   b. That a requirement of the pilot clinical networks is to develop an eye health community model that includes an increase in the role of optometrists including making six-month post-graduate fellowships available

2. That HWNZ supports a change in the regulations under the Medicines Act to enable optometrists to prescribe glaucoma medications in accordance with developed guidelines
3. That HWNZ supports and fund an increase of training places in ophthalmology based on predicted need

4. That HWNZ investigate the role and career pathway of ophthalmic nurse specialists within the hospital and other settings

5. That HWNZ supports the development and establishment of a post-graduate diploma in ophthalmology that is tailored to the needs of the different professions e.g. GPs and nurses

6. That HWNZ supports the investigation of the development of an undergraduate degree in orthoptics

7. That HWNZ supports the rationalisation and standardisation of eye health child screening services and vision and hearing screening testers in New Zealand

8. That the following service principles/recommendations made by the review team are passed on to the relevant Ministry policy section by HWNZ to incorporate into policy work with the DHBs:

   - Every community requires access to a diabetic retinal screening service that builds on local services
   - There should be at least 90% uptake from diabetic patients for the diabetic retinal screening service
   - The current diabetic guidelines that includes guidance on retinal screening should be implemented equitably throughout New Zealand
   - All people with macular degeneration and low vision need to be assessed by an eye health professional with low vision expertise
   - Every community needs access to low vision aids
   - A published network of low vision eye health services should be set up in New Zealand
1. Introduction
In August 2010 Health Workforce New Zealand invited Dr. Mike O’Rourke (ophthalmologist and Chair of the New Zealand Branch of The Royal Australian and New Zealand Branch of Ophthalmology RANZCO) to form a workforce review group to identify the workforce and training needs of the eye health workforce (see appendix 1). In undertaking this workforce review the group were asked to:

- Develop a vision of the eye health service and workforce for 2020
- Develop a clinical scenario/model of care for the eye health workforce that is patient-centred, team based and builds in primary care where appropriate.

The group were asked to undertake this review within the context of:

- A likely doubling of eye health service demand but only a 30-40% increase funding over the ten years
- Maintenance of quality in service provision
- A continued need to address inequalities.

The review was to be done within a sixteen-week period. The review started in August 2010 and was completed in December 2010.

2. Method
The patient journey process was suggested by HWNZ to generate service and workforce model configurations for 2020. In using this approach the review group were to:

- Map the current patient journey through the eye health service
- Identify existing models of care that utilize workforce in an innovative way
- Develop and agree on innovative clinical scenario(s) in eye health care for 2020
- Identify what workforce and training needs are needed to make the scenario(s) work.

Health Workforce New Zealand appointed a project manager to manage the review to completion within the sixteen weeks. During this period:

- The eye health workforce review group had two half day meetings and a teleconference
- A smaller working group (4 people including the project manager and chair) had two teleconferences to follow up from the second meeting and to prepare for the final review group teleconference
• The project manager met or phoned review team members to facilitate the different eye health professions’ input into the development of the clinical scenarios and identification of workforce and training needs.

• A desktop review of relevant literature on eye health models of care and workforce was carried out to inform the review.

• Information on available workforce data; definitions of eye health workforce professions; survey of optometrists, managed clinical networks, consumer issues and nursing was sent out to the group as background information to the review (see appendices 2,3,4,5,6,7).

At the first meeting the group started to map out the current patient pathway for major eye health disorders including diabetic retinopathy, cataract and glaucoma.

Following the first meeting, Professor Charles McGhee and Sue Raynel (review group members) volunteered to develop clinical scenarios/pathways for the common eye health disorders. These scenarios included:

• General referral pathway
• Cataract
• Glaucoma
• Diabetes
• Uveitis
• Macular Degeneration (MD) (see appendix 8)

These scenarios were sent to the review group for consideration and feedback along with information on the eye health professions prior to the second meeting.

At the second meeting on 5th November, the review group went through each scenario and identified areas of agreement. Following this meeting the smaller working group further refined the areas of agreement and planned the final teleconference.

At the final teleconference on the 13 December 2010 the group agreed on the review recommendations.

3. Key issues identified from discussions

The service and workforce issues that were identified during discussions are outlined below.

Eye health service issues

• Eye health services in New Zealand are mainly hospital based.
• Some hospital eye health services could move to the community to increase consumer access e.g. management of some eye health conditions and first specialist assessments

• Consumers often have to wait long periods for hospital appointments and in outpatient clinics waiting to be seen. Communication to patients was also an issue

• Communication and collaboration between hospital and community needs to be improved particularly in the referral process, prioritisation of hospital treatment and discharge process

• Access to diabetic retinal screening services needs to improve

• Access to low vision\(^1\) service and low vision aids needs to improve

• There is a need for rationalising and standardisation of child vision and hearing screening services – B4 school checks

• There is a need for more organisation and integration of eye health services between hospital and community.

Eye health workforce issues

• There is a more than adequate supply of optometrists with 678 optometrists currently working nationwide and 50 being trained each year\(^2\)

• Community optometrists could be better utilised in the assessment, treatment and management of eye health care within the wider eye health team particularly with the shortage of ophthalmologists

• Optometrists have an effective community public health role in at least one health service in New Zealand\(^3\) and in many other countries including USA, Australia, England and Scotland\(^4\)

\(^1\)Low vision is defined as: vision impairment that cannot be corrected by spectacles, contact lenses, and/or medical or surgical intervention.

\(^2\)Lesley Frederikson, National Director, New Zealand Association of Optometrists (NZAO)

\(^3\)Frederikson L.G., Jacobs R. J. Diabetes eye screening in the Wellington region of New Zealand: characteristics of the enrolled population (2002-2005) NZMJ 14 March 2008, Vol 121 no. 1270; ISSN 1175 8716


\(^6\)http://www.aoa.org/x6494.xml

\(^7\)http://www.nei.nih.gov/healthyeyes/financialaid.asp

\(^8\)http://newsfromaoa.org/2010/10/28/aoa-healthy-eyes-healthy-people%E2%80%93grants-target-diverse-eye-care-needs/
• Community optometrists could benefit from more exposure to eye disease and pathology in a hospital setting if they are to manage eye health conditions in the community.

• Sufficient numbers of ophthalmologists need to be employed and trained to cater for population growth and aging.

• There needs to be better use of nurse specialists (including nurse practitioners), and primary care professionals (GPs and practice nurses) in eye health care.

• More consistent training in eye health care is required for nurses, GPs and other eye health professions.

• There is a need for New Zealand training for Orthoptists who are trained overseas but provide a necessary service to children in New Zealand.

• There is a need to rationalise and standardise child vision and hearing screening services and testers in New Zealand. The quality of these services and testers varies throughout New Zealand. E.g. anecdotal information\(^{13}\) has identified that not all DHBs accept referrals from vision and hearing screening testers following screening. No information exists on how many DHBs are not accepting referrals and what happens to these cases if parents cannot afford to see a private eye care professional. This could be reducing the benefits accrued from vision screening in some areas.

4. Clinical Scenario/Vision for 2020

The vision for eye health services in New Zealand for 2020 is as follows:

*Eye health services in New Zealand will be based on need, place the consumer at the centre and integrated at the primary, secondary and tertiary level*

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\(^{10}\) Devarajan N, Williams GS, Hopes M, O’Sullivan D, Jones D, The Carmarthen Glaucoma Referral/Refinement Scheme, a safe and efficient service, Eye (Lond) Epub Oct 22 ahead of print.


\(^{13}\) Janet Digby, Project manager, “See Here” and also the workforce review group.
This vision incorporates a community model of eye health care, is focussed on improving the quality of eye health care services, efficiently utilises the different eye health workforces including the development of innovative roles. This vision would be realised through a national network of regional/local eye health managed clinical networks.

Managed clinical networks have been described as:

“...linked groups of health professionals and organisations from primary, secondary and tertiary care working in a coordinated manner, unconstrained by existing professional and organisational boundaries to ensure equitable provision of high quality effective health services....”\(^{14}\)

Managed clinical networks have been developed for a wide range of conditions including neurology, vascular services, coronary heart disease, stroke, diabetes, palliative care, epilepsy, multiple sclerosis, and cleft lip and palate\(^{15}\)\(^{16}\). The current New Zealand programme of MCNs includes: clinical genetics, neurosurgery, paediatrics and pre-implantation diagnosis. There are also four Regional Cancer Networks and a National Renal Clinical Network in New Zealand.

It is therefore possible that managed clinical networks could be established for eye health services (see appendix 5 for more information on managed clinical networks).

5. What would need to be done to achieve the Clinical Scenario/Vision for 2020?

Eye Health Services

As there is currently no eye health managed clinical network in New Zealand the review group proposed that one or more pilots are established to provide information on the organisation of eye health services including the innovative use of the eye health workforce. Once the pilots have been completed and evaluated the results could be used to inform the development of other eye health managed clinical networks in New Zealand.

The major functions of the pilot network(s) would be to:

- Identify the need for eye health care services within the network

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\(^{14}\) Scottish Executive Health Department NHS Circular: HDL (2002) 69

\(^{15}\) Ibid

• Develop an integrated model of eye health care across primary, secondary and tertiary eye health services that are aimed at increasing the efficiency and effectiveness of eye health services throughout the network. This would include how the eye health care team (ophthalmologists, optometrists, nurse specialists, orthoptists and other eye health care professionals) would function as an integrated team within a network region/locality.

• Review eye health services and work out which eye health services could move to the community within the available funding. To enable the shift of services into the community would require either a re-prioritisation of existing funding or new funding as private eye health community services (including optometrists) would need to be publically funded. It would be important not to leave hospital eye health services underfunded.

• Develop and improve clinical pathways, quality, referral and discharge processes for eye health care.

• Undertake workforce planning for the network including the ratios of the different eye health workforce required to deliver eye health care. This would include how optometrists could be integrated into public eye health care. It would also be aimed at more efficiently using eye health professionals within the network.

• Ensuring access to training for eye health professionals including optometrists, nurse specialists and primary care professionals, orthoptists and other eye health professionals.

The review team suggested three differently sized areas to pilot eye health managed clinical networks, Auckland, Porirua and Christchurch.

**Auckland**

Auckland (including Northland) was suggested because Auckland:

• Services the largest population (approx one third of NZ population) with diverse population groups with varying socio-economic status and ethnicity
• Has inequities in access to eye health services
• Has a range of health eye health services and also has the most eye health services in the country
• Is a major tertiary referral centre from other parts of the country
• Is already using eye health workforce in an innovative way e.g. use of optometrists, nurse practitioners, nurse specialists and orthoptists and could expand the eye health workforce into the community
• Have ten years of working relationships between ophthalmology, optometry and other eye health professionals
• Has already done a lot of work on how a clinical network could function in Auckland and has a champion that can lead and progress the development of a clinical network.

Porirua

Porirua was suggested because:

• The Porirua Basin has a smaller population of approximately 50,000
• Porirua is a high need area e.g. Cannon’s Creek
• There are inequities in access to eye health services
• Porirua only has one ophthalmology clinic once a week at Kenepuru Hospital with an ophthalmologist and an ophthalmic nurse
• There is an interest from the GPs in the area of setting up an eye health managed clinical network in Porirua including a community model of care
• The setting up of an eye health managed clinical network in Porirua currently has the support of both GPs and Optometrists in the area.

Christchurch

Christchurch was suggested because it has a:

• Population of just under 400,000
• Well-established and functional clinical network in Christchurch
• Well-organized general practice with a track record of innovation
• DHB that is keen to progress eye health services in the region
• Good relations with the local Ophthalmologist
• Track record of working with local optometrist with the cataract Initiative.

Eye Health Workforce

While clinical networks will work out the ratios of the different eye health workforce required to service the network and how the workforce will be utilised, there are a number of workforce areas that need to be addressed in moving towards the 2020 vision. The major workforce changes would be to the role of optometrists, eye health nurse specialists and primary care/general practitioners. There are also workforce issues to be addressed for ophthalmologists, orthoptists and vision screening testers.

Optometrists

New Zealand currently has a more than adequate supply of optometrists, some of
which could be utilised within the public health system\textsuperscript{17}. There are currently 678 optometrists in New Zealand and 50 being trained per year.

Optometrists’ training and scope of practice enables them to assess and manage most patients with eye health diseases/conditions, however, they cannot currently prescribe glaucoma medications. This would require a change in the regulations under the Medicines Act. This would enable optometrists to manage glaucoma patients in shared care arrangements in accordance with agreed protocols.

The review team recommended that optometrists and eye health services could benefit from having six-month post-graduate fellowships in hospitals to increase optometrists’ exposure to eye disease and pathology. This could also have the benefit of integrating optometrists into public eye health services. The review team proposed these fellowships could be offered initially within the pilot eye health managed network to provide information on the optimal use of optometrists both in hospital and the community.

\textbf{Nurse specialists}

Advanced nursing practice roles in eye health have been established in the UK for approximately 20 years. However, it is only in the last ten years that nurses in New Zealand have specialised in eye health care. The role of nurses in eye health care in New Zealand varies from providing technical assistance to ophthalmologists through to running nurse led clinics and performing certain treatments in hospitals. There is currently only one eye health nurse practitioner in the country and there are no eye health nurses working in the community. To fully utilise nurses in eye health care in both the hospital and community would require further development of these roles and access to post-graduate education in eye health (see appendix 7 for more information on nurses).

\textbf{Primary Care/General Practitioners}

General Practitioners currently assess, manage and refer patients who have eye health diseases. While training in eye health care used to be available for general practitioners, it is not currently available. A community model of eye health care that provides additional responsibilities in the management of patients with eye health diseases would require general practitioners and practice nurses who are trained in eye health care. A post-graduate diploma in ophthalmology would enable GPs and practice nurses to have access to more consistent eye health training in New Zealand.

\textsuperscript{17} Lesley Frederikson, National Director, New Zealand Association of Optometrists (NZAO)
Ophthalmologists

Currently there is a shortage of ophthalmologists and only a total of 18 training places in ophthalmology throughout New Zealand (see appendix 2). This will be insufficient to meet future population growth and the increase in eye health conditions that will result from the aging population even with the development of clinical networks. While the other eye health workforces can assist with medical treatments of some eye health disease, ophthalmologists are the only eye health workforce that undertakes eye health surgery and would provide an essential leadership role within eye health managed clinical networks. There is therefore a need to address both workforce numbers and training places.

Orthoptists currently diagnose and provide non-medical management of strabismus (squint) amblyopia (lazy eye) and eye movement disorders with a particular focus on children with eye health problems in New Zealand. They increase the patient throughput in paediatric ophthalmology clinics considerably in the public health system but also have the potential to work collaboratively in the community in providing eye health care services. There is currently no training in New Zealand for orthoptists, they are generally recruited from the UK and often return back to their country of origin after 1-2 years. There is support in New Zealand for an undergraduate degree in orthoptics from Auckland University.

Vision and hearing screening Testers

The quality of eye health child vision and hearing screening services and testers varies throughout New Zealand. There is a need to rationalise and standardise both the services and the training of the testers.

6. Conclusion

The requirement of the review to identify a vision and model of eye health services for 2020 that more effectively utilises the eye health workforce was a challenge that enabled the review group to consider how eye health services could be improved and also what changes were needed to the workforce to enable this improvement by 2020.

As identified above, there were a number of service and workforce issues identified by the review group. The group’s vision was that integrating eye health clinical services at the primary, secondary and tertiary level through an eye health managed clinical network could enable services to come together to plan and implement
improvements in eye health services that addressed those issues and organised services based on population need including the aging population. Such a network could also enable a community model of care to be formed so eye health care could move closer to the consumer, increase access to health services, and also better utilise available workforces e.g. community optometrists.

The setting up of eye health managed clinical networks could also enable workforce development including working out the ratios of eye health care professionals required e.g. the ratio of ophthalmologists to optometrists, and the development of more innovative eye health roles. The exact numbers of eye health workforce for future networks would be dependent on what ophthalmology roles would transfer to the community. More work on this would be needed and could be modelled within the pilot networks.

The group thought in moving forward to realise the vision that as there are currently no eye health managed clinical networks in New Zealand, it would be important to establish pilot networks that would be evaluated to provide the necessary evidence for setting up other eye health networks within New Zealand. It would also be important to have a sufficiently trained eye health workforce.

7. Recommendations

1. That HWNZ supports and funds the establishment of pilot eye health managed clinical networks that would be evaluated. The review team suggested three differently sized areas to pilot eye health managed clinical networks in order of priority; Auckland, Porirua and Christchurch.

   That a requirement of the pilot clinical networks is to develop an eye health community model that includes an increase in the role of optometrists including making six-month postgraduate fellowships available.

2. That HWNZ supports a change in the regulations under the Medicines Act to enable optometrists to prescribe glaucoma medications in accordance with developed guidelines.

3. That HWNZ supports and fund an increase of training places in ophthalmology based on predicted need.

4. That HWNZ investigate the role and career pathway of ophthalmic nurse specialists/nurse practitioners within the hospital and other settings.

5. That HWNZ supports the development and establishment of a post-graduate diploma in ophthalmology that is tailored to the needs of the different
professions e.g. GPs and nurses.

6. That HWNZ supports an investigation of the development of an undergraduate degree in orthoptics.

7. That HWNZ supports the rationalisation and standardisation of eye health child screening services and vision and hearing screening testers in New Zealand.

8. That the following service principles/recommendations made by the review team are passed on to the relevant Ministry policy section by HWNZ to incorporate into policy work:

- Every community requires access to a diabetic retinal screening service that builds on local services
- There should be at least 90% uptake from diabetic patients for the diabetic retinal screening service
- The current diabetic guidelines that includes guidance on retinal screening should be implemented equitably throughout New Zealand
- All people with macular degeneration and low vision need to be assessed by an eye health professional with low vision expertise
- Every community needs access to low vision aids
- A published network of low vision eye health services should be set up in New Zealand.
## Appendix 1: Members of the Review Team

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
</tr>
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<tbody>
<tr>
<td>Dr. Mike O’Rourke</td>
<td>Ophthalmologist</td>
</tr>
<tr>
<td>Dr. Lesley Frederikson</td>
<td>National Director NZ Association of Optometrists</td>
</tr>
<tr>
<td>Professor Robert Jacobs</td>
<td>Optometrist and academic</td>
</tr>
<tr>
<td>Professor Charles McGhee</td>
<td>Ophthalmologist and academic</td>
</tr>
<tr>
<td>Wilson Sue</td>
<td>Optometrist</td>
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<tr>
<td>Sue Raynel</td>
<td>Manager New Zealand Eye Health Centre</td>
</tr>
<tr>
<td>Geoff Sargant</td>
<td>Optometrist</td>
</tr>
<tr>
<td>Derek Sherwood</td>
<td>Ophthalmologist</td>
</tr>
<tr>
<td>Elizabeth East</td>
<td>Consumer</td>
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<tr>
<td>Denise Keay</td>
<td>Consumer</td>
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<tr>
<td>Dr. Harsed Chima</td>
<td>General practitioner</td>
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<tr>
<td>Laura Lambie</td>
<td>Project manager</td>
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<tr>
<td>Sandra Cumming</td>
<td>HWNZ analyst</td>
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### Appendix 2: NZ Ophthalmic Workforce Survey

Revised May 2010

<table>
<thead>
<tr>
<th>Consultant ophthalmologists</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
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<tbody>
<tr>
<td>Full-time public</td>
<td>8</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>Part-time public</td>
<td>84</td>
<td>79</td>
<td>83</td>
</tr>
<tr>
<td>Full-time private</td>
<td>15</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Part-time private only (no public)</td>
<td>14</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>121</td>
<td>112</td>
<td>119</td>
</tr>
</tbody>
</table>

This equates to one ophthalmologist per 35,175 population in 2008

NZ population estimate April 2010: 4,365,865: i.e. currently we have one ophthalmologist per 36,688 people

Plus 3 MOSS each year = 124 specialists in 2008, 116 in 2009, 122 in 2010

Of these:  
- 2008 - 21 (16%) overseas trained
- 2009 - 27 (23%) overseas trained
- 2010 - 26 (22%) overseas trained

It is generally assumed that it is appropriate to train adequate numbers of specialists for the country’s need. We will always lose some ophthalmologists overseas, so in a healthy balanced workforce there will always be some overseas trained. This number however is much greater than the number of NZ trainees “exported” and reflects the fact that we have not been training sufficient ophthalmologists for the country’s needs.

The Health Workforce Information Project Ophthalmology Workforce Forecast looked at the 4 years prior to 2008 and found:

“The supply model assumes that, on average, around 7 ophthalmologists are entering the public workforce each year”.

During this period the training scheme was producing 4-5 graduates a year, and there has been some loss of NZ graduates overseas. In summary, we have depended quite heavily on medical immigration in recent years to maintain ophthalmologist numbers.

### Unfilled vacancies in the public system:

- 2008 16, 2009 13, 2010 12.5

However only 3 of these were actually being advertised in Jan 2010.

In addition, 2 vacancies present at Christchurch in January have now been filled

Analysis of present vacancies:
- Christchurch 2 now filled
- Counties Manukau 4 under investigation
Nelson 1 still unfilled
Otago 1 4/10 vacancy: trying to develop position to full time before advertising
Southland 2 remain vacant
Timaru 2 1 advertised
Wellington probably 1, situation being assessed at present

This situation has improved considerably over the last two years.

**Estimate of private vacancies**

2008 8, 2009 5, 2010 7

**Likely to retire in the next 5 years**

2008 28, 2009 22, 2010 23
(average of about 5 per year)

**New public hospital positions are planned at this stage to be created in the next 2 years**

2008 8, 2009 8, 2010 7

There are 18 registrars in the first 4 years of the 5 year training programme, i.e. it produces 4 to 5 new ophthalmologists per year. This has been constant throughout the 3 years.

**SHOs, Non-Training Registrars and Fellows**

2008 10, 2009 16, 2010 24

i.e. 124 specialists, 28 juniors in 2008
116 specialists, 34 juniors in 2009
122 specialists, 42 juniors in 2010

In the ten years from 1998 to 2007 NZ produced 42 Fellows, 4.2 per annum.
Of these 5 left NZ. The remaining 37 are working in NZ at May 2010.
This implies loss of 1 trainee every 2 years.

**Simple workforce equations (consequent on the above figures) for January 2010:**

Present need 4 - 20 ophthalmologists
Future need: in the next 5 years,
23 likely to retire,
2 - 3 likely to migrate out of NZ,
and 7 new public positions anticipated in next 2 years:

Therefore in next 5 years it is estimated 33 new ophthalmologists needed,
i.e. 6-7 per year
in addition the present shortfall has be accommodated
and, this is what the HWIP study came up with for recent years for the public sector only (see above, “around 7 ophthalmologists are entering the public workforce each year”).
We are producing 4.2 trainees per year

Since trainees spend 4 years in training positions, a need for 7 ophthalmologists a year requires 28 training positions (allowing for losses overseas 30 posts): we therefore are 10 to 12 training positions short.

RANZCO Access Economics workforce Survey 2006
Predicted a shortfall of 120 ophthalmologists in Australia by 2015
Anticipated a 40% increase in demand from 2006 to 2024

Other specialties in NZ
Workforce deficits are widespread across the various specialties and worse than our situation in specialties like O & G and pathology.

Ophthalmology has 121 practicing specialists and 18 trainees. Ratio: 1 trainee per 7 specs
Pathology has 210 practicing specialists and 60 trainees. Ratio: 1 trainee per 3.5
Anaesthetics 614 245 1 per 2.5
O & G 206 82 1 per 2.5
Psychiatry 408 176 1 per 2.3

James Stewart
May 2010
## Appendix 3: Eye Health Professions: Summary

<table>
<thead>
<tr>
<th>Profession</th>
<th>Definition</th>
<th>Key functions</th>
<th>Qualifications/training</th>
</tr>
</thead>
</table>
| **Ophthalmologist**       | Is concerned with the anatomy, physiology and diseases of the eye.          | Explain diagnostic and treatment procedures to patients  
Obtain medical histories from patients  
Administer diagnostic tests  
Diagnose eye conditions  
Provide surgical treatment  
Provide medical treatment  
Prescribe/administer medication, including drops and injections  
Provide post-surgery follow up  
Provide routine check ups once condition stabilised | 6 years medical undergraduate education  
2 + years postgraduate prevocational training  
5 years vocational (RANZCO)                                    |
| **Ophthalmic technician** | Helps ophthalmologist collect data and measurements to allow the correct diagnosis and treatment of eye diseases and problems | Perform simple eye exams  
Assist with eye surgery  
Explain diagnostic and treatment procedures to patients  
Obtain medical histories from patients  
Administer diagnostic tests  
Measure and recording vision  
Test eye muscle function  
Provide contact lens education  
Administer eye medication  
Maintain optical and surgical instruments | No formal NZ qualification  
Internationally, 1 year certificate or diploma  
In NZ, ophthalmic technicians typically have an orthoptists, optometry or nursing degree as well as ongoing clinical training in developing technology and visual disorders. |
| **Ophthalmic technologist** | Same as ophthalmic technician but has more training and expanded responsibilities | As above, plus  
Perform ophthalmic clinical photography and fluorescence angiography  
Perform electrophysiological and microbiological procedures  
Supervise other ophthalmic staff | No formal NZ qualification  
Internationally, 2 year associate degree |
| **Ophthalmic assistant**  | Works with ophthalmologists to provide eye care to patients.                | Conduct eye tests  
Measure vision and test eye muscular function  
Apply eye dressings  
Show patients how to properly use contact lenses | No formal NZ qualification  
Internationally, 1 year certificate or diploma  
On-the-job |
<table>
<thead>
<tr>
<th>Orthoptist</th>
<th>Diagnoses and provides non-medical management of strabismus (squint), amblyopia (lazy eye) and eye movement disorders, particularly in children.</th>
<th>Ocular motility diagnosis &amp; co-management Vision screening Assessment of special needs Assessment and rehabilitation in neurological disorders Low vision assessment and management Glaucoma assessment &amp; stable glaucoma management Biometry (includes sonography work) Fundus photography &amp; screening Visual electrodiagnosis Retinoscopy and refraction, such as using a phoropter to assess refractive errors Assistance with surgical procedures</th>
<th>No formal NZ qualification</th>
<th>Internationally, 2-4 year postgraduate degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered Nurse</td>
<td>Works as part of ophthalmic team to provide eye care</td>
<td>Administer diagnostic tests Administer medication (excluding eye injections) Obtain patient history Explain diagnostic tests/procedures Apply/ remove dressings Maintain optical/ surgical instruments</td>
<td>3 years – Bachelor of Health Science/ Registered Nurse</td>
<td>No formal NZ qualification for eye health specialty Training informal</td>
</tr>
<tr>
<td>Nurse Specialist</td>
<td>Works collaboratively as part of ophthalmic team</td>
<td>Administer diagnostic tests Administer medication including eye injections Obtain patient history Explain diagnostic tests/procedures Apply/ remove dressings Maintain optical/ surgical instruments Provide surgical treatment for minor external eye conditions Undertake FSA for cataract referrals Provide post-surgery follow up Provide routine check ups once condition stabilised Fluorescin staining of the cornea Remove foreign body Diabetes retinal screening – primary and secondary grading Nurse-led clinics</td>
<td>3 years - BHSc / Registered Nurse Minimum of 2 years experience in specialty Minimum of 50 audits undertaken prior to accreditation by ophthalmologist</td>
<td></td>
</tr>
<tr>
<td>Nurse Practitioner</td>
<td>Works collaboratively as part of ophthalmic team as well as independently</td>
<td>Explain diagnostic and treatment procedures to patients Obtained medical histories from patients Administer diagnostic tests Diagnose eye conditions Prescribe/administer medication, including drops and injections Provide post-surgery follow up Provide routine check ups once condition stabilised Fluorescin staining of the cornea Remove foreign body</td>
<td>3 years - BHSc / Registered Nurse Clinically approved Masters degree Minimum of 4 years experience in specialty</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Optometrist</td>
<td>Is concerned with eyes and related structures, as well as vision, visual systems, and vision information processing</td>
<td>Examine clients’ eyes and visual systems to diagnose vision problems and eye diseases. They provide correction and other treatment when required</td>
<td>Bachelor of Optometry (BOptom), University of Auckland (4 years + 1 year biomedical science prerequisite)</td>
<td></td>
</tr>
<tr>
<td>Vision hearing screening technician</td>
<td>Screen vision and hearing for any problems that may require attention</td>
<td>Test vision and hearing, primarily in children Refer on as necessary</td>
<td>National Certificate in Vision and Hearing Screening being considered for registration with NZQA at Level 3 1 year academic and on-the-job</td>
<td></td>
</tr>
<tr>
<td>General practitioner</td>
<td>Deals with the anatomy, physiology and diseases of the whole body, may have an area of special interest.</td>
<td>Measure visual acuity and conduct pinhole testing Conduct external exam of eye Evert eyelid Exam pupil and red reflex Assess ocular movement and conduct cover test Conduct visual field test by confrontation Conduct direct ophthalmoscopy Test colour vision Fluorescin staining of the cornea Remove foreign body Advise on correct application of an eyepad and when to use one Recommend seeing other eye health professional</td>
<td>6 years medical undergraduate education 2 + years postgraduate prevocational training 3 years vocational (RNZCGP), eye health one of about 40 components in GP training</td>
<td></td>
</tr>
<tr>
<td>Pharmacist</td>
<td>Concerned with medication, their use and their composition and reactions with each other</td>
<td>Refer to ophthalmologist</td>
<td>BPharm (4 years)</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>--------------------------</td>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide patient information on prescription only, pharmacy only and over the counter medication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide medication for conjunctivitis (medication now pharmacist only rather than prescription only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recommend seeing other eye health professional</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 4: Exploring the Patient Journey towards Specialist Care

Introduction

As part of its contribution to the discussions for the Eye Health Workforce Service Review, the NZAO undertook a project to better understand the situation of people in the community who access optometry care and the numbers that move through to hospital specialist care.

Our starting point was to consider what symptoms prompt a person to seek eye health care and where they might seek it. Broadly speaking there are a few key drivers for initiating eye care: pain, red eye, vision loss, routine eye checks, and diabetes. The three ready options for eye care are general practice, optometry, or the emergency (A & E) services. In each of these cases some care can be provided and the patient is then managed, monitored, or discharged.

Using our membership as a source of information about what happens in the case of optometry care, we surveyed optometrists about the conditions that are included in the Ophthalmology National Access Criteria for First Specialist Assessment 2000. Considering the categories: Immediate (preferably seen within 24 hours from receipt of referral); Urgent (within 1 week); Semi-urgent (within 4 weeks); and Routine (within 6 months); we asked optometrists how many cases they had referred in the past month and what percentage of the cases had been referred to the public hospital. The short time frame of one month removed from consideration optometrists making very few referrals (e.g. reduced work hours, type of practice, practice patient profile) and conditions that are seen in only very small numbers by community optometrists.

The survey was conducted over a single week in October 2010 and a total of 400 optometrists 150 responded. Of these, 81 optometrists provided additional qualitative feedback on issues related to eye health care.

Number of Referrals

Table 1, below sets out the numbers of referrals reported by the optometrists and the percentages of these that were sent to the public system.

It can be seen from Table 1 that a higher proportion of referrals for immediate and urgent and conditions are directed to the public system than is the case for semi-urgent and routine. As urgency declines so does the proportion of referrals directed to the public system.

This may reflect the relative likelihood of the patient being seen at the hospital eye department for less demanding conditions; and other options being offered to patients who can afford to access treatment privately.

Questions that arise:
1. Are some people choosing to take even the most urgent conditions to private specialists? Why?
2. Even with the private payers out of the picture, does the public system provide access for all those who cannot pay (or do not wish to) regardless of urgency?
3. What happens to the people who are referred to the public system but are not accepted into it?
Table 1. Referral Numbers by Category – National Referral Guidelines 2000

<table>
<thead>
<tr>
<th>Category</th>
<th>Criteria</th>
<th>Examples (Not an exhaustive list)</th>
<th>Number of Referrals in past month</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Immediate</td>
<td>• Trauma not able to be treated conservatively</td>
<td>• Surgical trauma to the lids, orbit, ocular structures. • Penetrating eye injuries • Retained intraocular foreign bodies • Hyphaema • Chemical burns</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>• Painful red eye with significant loss of vision</td>
<td>• Corneal ulcer • Acute glaucoma</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td>• Sudden severe vision loss</td>
<td>• Ischaemic ocular conditions eg.temporal arteritis</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>• Painful diplopia</td>
<td>• Third nerve palsy</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>PERCENTAGE REFERRED TO PUBLIC SYSTEM</td>
<td></td>
<td>65%</td>
</tr>
<tr>
<td>2. Urgent</td>
<td>• Sudden visual loss</td>
<td>• Retinal detachment /haemorrhage</td>
<td>198</td>
</tr>
<tr>
<td></td>
<td>• Neurological conditions threatening permanent damage if treatment delayed</td>
<td>• Vitreous Haemorrhage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Diabetic conditions with loss of vision</td>
<td>• Disc Oedema • Other cranial nerve palsies • Acute field defects</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Retinopathy</td>
<td>127</td>
</tr>
</tbody>
</table>
### Painful red eye with loss of vision
- Iritis
- Herpes Zoster/simplex

### Traumatic conditions
- Corneal foreign bodies
- Orbital blowout fracture
- Corneal abrasions
- Blunt trauma

### Neoplasms
- Intraocular malignancy

### Infective conditions
- Acute dacryocystitis
- Unresponsive conjunctivitis

<table>
<thead>
<tr>
<th>PERCENTAGE REFERRED</th>
<th>TO PUBLIC SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>62%</td>
<td></td>
</tr>
</tbody>
</table>

#### 3. Semi-Urgent
- Lid Tumours
- Moderately progressive diabetic conditions
- Misc conditions threatening permanent damage if treatment delayed
- Infective disease
- Orbital disease

- BCC's and SCCs
- Vision threatening retinopathy
- Retinopathy in pregnancy
- Entropion
- Chronic dacryocystitis
- Proptosis -displacement of globe
- Thyroid eye disease
<table>
<thead>
<tr>
<th>Category</th>
<th>Conditions</th>
<th>PERCENTAGE REFERRED</th>
<th>TO PUBLIC SYSTEM</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi - Urgent</td>
<td>• Bilateral “hand movement” cataracts</td>
<td></td>
<td></td>
<td>53%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Glaucoma suspects – high risk</td>
<td></td>
<td></td>
<td>52%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Routine</td>
<td>• Cataracts and media opacities</td>
<td></td>
<td></td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Glaucoma suspects – low risk</td>
<td></td>
<td></td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Routine</td>
<td>• ARM</td>
<td></td>
<td></td>
<td>41%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Chronic non sight threatening conditions</td>
<td></td>
<td></td>
<td>36%</td>
</tr>
<tr>
<td></td>
<td>• Congenital/adult epiphora</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Significant Pterygia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Significant ptosis • Cosmetic squint</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ectropion • Epiphora</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Routine fundus exam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Diabetic conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Refractive error with comorbidity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Keratoconus • High myopia</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Analysis of comments

As noted above 81 optometrists provided additional qualitative feedback on issues related to their referrals, the system and eye health care generally. These issues are summarised in table below. The table shows that most of the issues identified by the optometrists were related to the difficulties in accessing treatment, followed by a lack of effective communication on patients entering the hospital system and a need for more community management of eye health conditions by optometrists. These issues are discussed further below.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Number of comments</th>
<th>% of total comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of effective communication between optometrist and hospital</td>
<td>31</td>
<td>38%</td>
</tr>
<tr>
<td>Poor access to hospital medical and surgical eye treatment</td>
<td>51</td>
<td>63%</td>
</tr>
<tr>
<td>A need for more community management of patients by optometrists</td>
<td>24</td>
<td>30%</td>
</tr>
<tr>
<td>Increased use of optometrists in hospitals</td>
<td>4</td>
<td>5%</td>
</tr>
<tr>
<td>Lack of public and professional awareness of optometry role</td>
<td>4</td>
<td>5%</td>
</tr>
</tbody>
</table>

Communication between optometrist and hospital
38% (31) of the comments made by optometrists were concerned about the lack of communication from hospitals to referring optometrists. Their issues were mainly related to:
- the difficulty of finding a registrar or ophthalmologist to talk to when they had a patient that needed referral
- The lack of a reply to a referral sent by the optometrist leaving the optometrist not knowing when their patient would gain an appointment
- The lack of feedback on their patient’s progress once they enter the hospital system so that the optometrist is left not knowing what is happening to his/her patients unless the patient tells them, but the optometrist is expected to follow up/monitor the patient.

These issues have had a major effect on optometrists’ ability to effectively manage their patients.

Access to hospital medical and surgical treatment
The majority (51, 63%) of comments made by optometrists related to the difficulties of managing patients who required publically funded medical and/or surgery for their eye health problem. This appeared to be a major frustration for optometrists, particularly if a person had a high need e.g. cataract surgery.

A number of optometrists expressed concern that the threshold for gaining access to treatment particularly cataract surgery was often too high and varied between hospitals. Even when the person was accepted for surgery only one cataract is generally removed which means the patient has to be assessed go on the waiting list again. Often people were
waiting a long time for cataract surgery which impacts on their quality of life including their ability to work. This was particularly a problem for people who could not afford private health care and left optometrists feeling powerless as to how to manage their patients. The view was expressed that more funding should be made available to ensure that cataract surgery is available in public hospitals based on need. This also applies to other eye health conditions.

The other major issues identified by the optometrists were that hospitals needed to:
- make the referral criteria clear and communicate to optometrists and other primary providers when these change
- communicate changes in the threshold for treatment/prioritisation
- monitor and correct inequities in access – this includes:
  - the availability of services to people in different geographical areas; and
  - being aware of issues like people paying for a private ophthalmology consultation and being treated earlier as a result of this meaning that people with a higher need may have to wait longer
- Ensure that there is sufficient funding to deliver services based on need, particularly cataract surgery.

Community management of patients by optometrists
30% (24) comments related to optometrists wanting to increase their role in the management of patients with eye health problems in the community. This it was suggested will benefit patients who will be seen more quickly and also assist in easing the pressure on the hospital waiting lists enabling more urgent patients to be treated.

It was suggested that optometrists could:
- triage patients in the community e.g. those with cataract, ARM, glaucoma
- assist in the timely assessment and treatment of those with acute and subacute eye health conditions e.g. iritis, minor infections etc
- manage more chronic conditions in the community e.g. glaucoma
- provide follow up care for people discharged from hospital
- co-manage patients with ophthalmologists.

Use of optometrists in hospitals
4 (5%) of optometrists made comments related to the use of optometrists in hospitals. These comments are summarised as follows:
- the waiting list could be reduced by the use of optometrists:
  - One optometrist pointed out that he/she ran a hospital cataract pre and post op clinic and a stable glaucoma clinic which enabled a cut in the hospital waiting list to 25% of what it had been
  - Another optometrist works at the local eye department one session a week which enables the department to stay (just) within the waiting list guidelines
- semi-urgent referrals could be seen by optometrists, nurses or orthoptists which could take the load of ophthalmologists
- optometrists (who have the expertise in refraction) should refract children rather than ophthalmologists.
Lack of public and professional awareness of optometry role

4 (5%) of optometrists indicated that there was a lack of awareness of the optometrist’s role. These comments indicated that there was a lack of awareness of the role of the optometrist among hospital eye department staff, GPs, consumers and the general public.

Potential for Improvement

All respondents were asked to think about the various types of referrals they make using the above categories and to indicate the extent towards which they felt there might be room for improvements which would benefit patients. Options included: Significant improvements could be made; There is room for some improvement; Things are working well; or the respondent could opt out of the question. Table 3 shows the percentage of respondents indicating improvements could be made (significant or just room for improvement).

Table 3. Proportion of respondents who considered there was room for improvement to eye health services

<table>
<thead>
<tr>
<th>Category</th>
<th>Criteria</th>
<th>Proportion of respondents who considered there was room for improvement to the service. (n = 209)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Immediate</td>
<td>• Trauma not able to be treated conservatively</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Painful red eye with significant loss of vision</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Sudden severe vision loss</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Painful diplopia</td>
<td>38%</td>
</tr>
<tr>
<td>2. Urgent</td>
<td>• Sudden visual loss</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Neurological conditions threatening permanent damage if treatment delayed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Diabetic conditions with loss of vision</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Painful red eye with loss of vision</td>
<td>42%</td>
</tr>
<tr>
<td></td>
<td>• Traumatic conditions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Neoplasms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Infective conditions</td>
<td></td>
</tr>
</tbody>
</table>
3. Semi-Urgent

- Lid Tumours
- Moderately progressive diabetic conditions
- Misc conditions threatening permanent damage if treatment delayed
- Infective disease
- Orbital disease

52%

Semi-Urgent

- Bilateral “hand movement” cataracts

45%

Semi-Urgent

- Glaucoma suspects – high risk

51%

4. Routine

- Cataracts and media opacities

73%

Routine

- Glaucoma suspects – low risk

51%

Routine

- ARM

58%

Routine

- Chronic non sight threatening conditions
- Diabetic conditions
- Refractive error with comorbidity

44%

The optometrists seem to be expressing a view that the system is less than optimal for a large number of patients. There is particular concern for patients with semi-urgent conditions and those with cataracts, glaucoma risk factors, and ARM who will ultimately have to be better supported in the community.

Generating some Models

From the survey we moved to drawing a simple diagram to describe the generic choices that we have for providing eye health care once a condition is diagnosed. From what we learned in the optometrist survey we saw two key paths: to specialist care for complex and urgent needs; and to primary care / community care for non-urgent and not complex conditions. This is shown in Figure 1.
Figure 2. represents a more complex flow chart expanding on the two key routes and considering an optometry management route that could be discussed by the group as part of the mix of solutions.
Aim:
To better meet the needs of people with eye conditions that can be managed in the community

Advantages:
Community based, patients get better sooner, more convenient care
Uses an existing workforce to rationalise care and provide more cost-effectively
Requires no additional training courses for new workforces
Reduces burden on hospital system so eye departments can focus on high need and more urgent cases

Requirements:
Information linkages
Funding changes
Clinical guidelines
Public education of optometry role
SMO/Registrar training (in part) at optometry practices
Change of regulations to enable optometry to prescribe glaucoma meds

Next steps:
Service review, and
Look at reprofiling of funding

Colour Key for patient pathways
Diagnostic route - already in use
- allows patients to be prioritised for ophthalmology care before referral and ensures that only those needing hospital based care are directed to the eye department

Problematic route - should minimise use
- general practice also needs to provide a diagnostic filter before initiating a referral

Optometry management route - this can be used to retain more care in community

Information flows - crucial element
The group could work on formalising the red and purple routes to make more consistent across the DHBs and find ways to increase the number of people being managed in the community
Appendix 5: Eye Health Managed Clinical Networks: Paper prepared for the Eye Health Workforce Review Meeting

Introduction

This paper provides information on managed clinical networks and issues that need to be considered in relation to setting up eye health managed clinical networks. It also provides two suggestions on pilot eye health managed clinical networks. The information in this paper has been drawn from NHS Scotland\textsuperscript{18}, Australia\textsuperscript{19}, and current Ministry of Health models of managed clinical networks\textsuperscript{20} and from the eye health workforce review team.

What are Managed Clinical Networks?

Managed clinical networks (MCNs) are a relatively new way of working. They challenge existing professional boundaries, to ensure patient centred and equitable provision of clinically effective services throughout the network\textsuperscript{21}. The NHS (Scotland) has described managed clinical networks as:

\begin{quote}
\ldots linked groups of health professionals and organisations from primary, secondary and tertiary care working in a coordinated manner, unconstrained by existing professional and organisational boundaries to ensure equitable provision of high quality effective health services.\ldots \textsuperscript{22}\\
\end{quote}

In Scotland, MCNs have been developed for a wide range of conditions including neurology, vascular services, coronary heart disease, stroke, diabetes, palliative care, epilepsy, multiple sclerosis, and cleft lip and palate. MCNs can also be developed in relation to service functions e.g. (emergency, pathology, critical care, eye health care). The Australian Government Cancer Australia has developed a cancer network based on the Scottish model\textsuperscript{23}. The current New Zealand programme of MCNs includes: clinical genetics, neurosurgery, paediatrics and pre-implantation diagnosis. There are also four Regional Cancer Networks and a national renal clinical network.

MCNs can be formed locally (DHB), regionally, or nationally. National MCNs can be developed where a disease or service is so rare that it makes sense to organise it nationally e.g. paediatric palliative care.

MCNs in Scotland influence the operation of services, whereas most MCNs in New Zealand are advisory as the National Health Board/DHBs are responsible for the funding of services.

\textsuperscript{19} Scottish Executive Health Department NHS Circular: HDL (2002)69
\textsuperscript{20} HR 2009101, Government policy on the development of clinical networks
\textsuperscript{22} Scottish Executive Health Department NHS Circular: HDL (2002)69
Key characteristics of MCNs

Well designed clinically led networks can enhance health service design, delivery and performance. In New Zealand, it is essential that the MCN has a strong and explicit structure and mandate and clear processes to link with decision-makers including NHB/DHBs.

The management of the MCN network in New Zealand can include:

- A lead clinician and manager with overall responsibility for the running of the network
- Senior DHB management membership who has the ability to strongly influence resource allocation and operational decisions at a national, regional and local level is also required
- Multidisciplinary health professionals
- Consumer representation
- Agency representation (within the network).

Network members need to be able to lift themselves beyond their employing organisation or own interests and take a local, regional, or national perspective in relation to the focus of the MCN. They need to understand the expectations of the MCN as well as the accountabilities of decision-making and funding bodies including NHB and/or DHBs.

Finding a balance between formality and informal management arrangements is seen as contributing to the effectiveness of MCNs24.

Managed Clinical Networks can have the responsibility for either managing or providing advice on:

- Service planning and funding
- Improving equity of access
- Designing and Improving clinical pathways
- Workforce planning, maintenance of standards, education and training e.g. better utilisation of scarce specialist resources, more efficient use of staff, developing innovative roles and ways of working thus preventing duplication of effort and resources.
- Improving quality and safety including the development of Network standards/protocols and clinical audit programme
- Increasing service efficiency including development of referral and follow up guidelines that inform evidence based practice

24 Scottish Executive Health Department NHS Circular: HDL (2002)69
• Movement of workforce for improved patient access and to enable professional skills to be maintained (only if operational networks e.g. as in Scotland).
• Clinical information systems
• A programme for the evaluation of the effectiveness of the Network

Factors associated with the success of MCNs include:\"25\:\!
• It is important to ensure that Networks are linked to accountability mechanisms and appropriate decision-making and funding bodies – NHB and DHBs in New Zealand
• Avoidance of Networks that are too large as they are costly and inefficient (based on Scottish experience)
• The development of a clear vision, mission statement and rules of engagement
• Networks are inclusive, individuals gain ownership of the network and all relevant agencies are included – ownership is facilitated by formalised contracts and Memorandum of Understandings.
• Strategies to promote network cohesion, e.g. joint finance arrangements, pooled budgets, agreed care protocols, people who work between agencies, integrated IT systems
• Respected professional leaders who will promote the Network to peers – professional “capture” needs to be avoided
• Professionals that allow the managers to manage and govern their activities
• Networks needs to meet the needs of its members and remain relevant.

Eye Health Managed Clinical Networks

The eye health review group have not yet discussed how an eye health managed clinical network could work. To date the eye health review group have developed and critiqued the following eye health scenarios:

• General referral pathway
• Cataract
• Glaucoma
• Diabetes
• Uveitis
• Macular Degeneration (MD)

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26 HR 2009101: Government Policy on the development of clinical networks
The major focus of discussions on the clinical scenarios has been:

- ensuring the consumer is at the centre of eye health services
- improving access to public eye health services
- improving the efficiency of eye health services including moving appropriate eye health services to the community and developing a community model of care
- increasing the utilisation of (private)community optometrists and other eye health professionals e.g. screening, shared-management of eye health conditions
- integration of primary, secondary and tertiary eye health services.

To enable the above to happen would require more detailed work because:

- An integrated model of eye health care for the clinical network would need to be developed. This would include how the eye health care team (ophthalmologists, optometrists, nurse specialists, orthoptists and other eye health care professionals) would function as an integrated team within a region/locality
- There would be a need to work done on which eye health services could move to the community and how a community model of care would work
- Moving eye health services from the hospital to community is not that straightforward as funding for hospital services is linked between services. It would be important not leave the hospital under funded for the necessary eye health services
- Integrating optometrists into public eye health care would require public funding as they are currently private
- Providing additional training for eye health professionals including optometrists, nurse specialists and orthoptists (including primary care) would require funding.

A way forward could be to set up one or more pilot eye health managed clinical networks to progress this work. One of the major functions of the network could be to set up a community model of care and to work out how the eye health workforce would function effectively to deliver integrated eye health services across the region/locality. If the network was successful then the network model could be rolled out to the rest of the country. To provide a comparison, it could be good to trial networks in areas with a larger and smaller sized population.

There has been interest from members of the review group in setting up eye health managed clinical networks in Auckland, Porirua and Christchurch.
Appendix 6: Consumer issues

Issues in Eye Health Care - Consumer Perspective Comments

Looking at the Pathways developed and circulated on 6 October three main areas for consideration occurred to us, as consumers. These are:

1. **Accessibility** - the point of eye health service delivery should be as close to the patient as possible, preferably local, with only what really must be done in a hospital being done there (unless, of course, the hospital is close enough for the patient to get to on foot or easily by public transport). At present patients and also those who accompany them to their hospital appointments (including friends acting as their drivers) can spend huge amounts of time sitting around in waiting rooms before and between routine monitoring procedures.

2. **Communication** in language that patients can understand. Patients often want to talk about their diagnosis or receive more information about what, if anything, they can do and ways to cope.

3. **Continuity of Care** - while it's the eye condition that's being treated, reduced vision affects the whole person. It impacts on mental health, physical fitness and wellbeing, mobility, family & relationships, work and leisure, and often means major lifestyle changes sooner or later. Service providers in the patient's own community are more likely than hospital-based professionals to know the patient as a person, pitch their communication at the right level for that patient, and have a better handle on what the patient's related health and welfare issues might be. They will also be more knowledgeable about other relevant local services and sources of help, e.g. low vision consultants, local support groups.

In terms of the information circulated on 22 October, possible ways of resolving these issues might be:

- Making better use of optometrists (a number of whom already have special interest areas like low vision) including expanding their prescribing rights. This is because there is a good spread of optometry practices throughout the country which are easily accessible to more patients than the eye clinics at the hospital.
- Considering introducing a NZ qualification for the critical “ophthalmic support” skill areas. This could alleviate some of the pressure on hospital-based ophthalmologists and optometrists. However, we would be concerned if this option were to lead to an increased emphasis on hospital-based treatment. We will be interested in hearing others’ perspectives on this.

Denise Keay & Elizabeth East

28 October 2010
Appendix 7: Delivering Future Ophthalmology Services - Nurses Roles: Sue Raynell (review team member)

Advanced nursing practice roles have been established in NHS hospitals in the United Kingdom for approximately 20 years but it is only in the last 10 years that NZ nurses have started taking up these roles. The majority of advanced practice role in NZ are nurse specialists with few nurses meeting the criteria set by the nursing council for nurse practitioner status.

**Nurse Practitioners** (title regulated by NZ Nursing Council, must have approved clinical Masters Degree and meet all criteria)
- In 2020 envisaged that the numbers would have increased considerably from the 1 currently practicing in NZ. However, this is dependent on DHBs’ having sufficient funding for these positions as NP’s in large public hospital institutions contribute significantly to the care for specific groups of patients.
- Have generally worked in the specialty for at least 4 years or more.
- Able to practice autonomously.
- Should have prescribing rights.
- Has own clinic workload, booked clinics under their name – FSA and follow-ups.
- Have own contract numbers within DHB patient contract.
- Would generally work collaboratively with ophthalmologists but could also work in the community with GP’s, optometrists, Marae based groups etc.
- Generally has 2-3 foci for practice within ophthalmology to meet nursing council requirements e.g. glaucoma, uveitis and acute.

**Nurse Specialist** – title not regulated by NZ Nursing Council but the council has recently introduced an expanded scope of practice within the registered nurse scope of practice.
- Nurse Specialists would ideally have completed at least a post-graduate certificate by preferably a post-graduate diploma.
- Practice in collaboration with ophthalmologists generally in a hospital setting.
- Would generally work in specific areas of practice e.g. cataract, glaucoma, minor surgery etc.
- Cannot prescribe.
- Have generally worked in the specialty for at least 2 years or more.

**‘General’ ophthalmic nurse**
- Undertake roles such as initial visual assessment, technical investigations in particular FFA, ICG.
- Be able to perform visual field, OCT etc.

**Rural areas**
Nurses in rural areas would require a more general ophthalmology focus but need some link with larger ophthalmic institutions or private practices for consultation and educational purposes.
Have the opportunity to work in larger ophthalmic institutions or private practices close to their area for up-skilling and networking.

**Issues for nurses**

1. Lack of funding for post-graduate education.
2. Access to education including on-going
3. Need some commonality across the country but will vary depending on the size of the service.
4. DHB funding to support roles such as NP and nurse specialist

Nurses currently undertake a number of Advanced Practice roles. However, the numbers of nurses is small and part-time roles. To meet the growing demand for eye services in the future the numbers must be expanded:

1. Cataract - FSA, pre-op and post-op care as well as administering sub-Tenon’s block in some institutions. Nurse undertaking sub-Tenon’s blocks greatly increases the capacity of ophthalmology OR’s on a daily basis and provide a service when anaesthetists are not available and also provides cost savings to ophthalmology depts.
2. Glaucoma – some FSA patients, follow-up and have collaborative models in place
3. Diabetes – undertake primary and secondary screener’s roles. The ability to do secondary screeners relieves a considerable burden from ophthalmologists
4. Minor surgery – nurses can impact significantly on minor surgical lists such as those for meibomian cysts and other minor lid lesions
5. Uveitis – relieves the workload from acute eye services, provides patients with continuity of care and care is collaborative with ophthalmologists
6. Acute eye services – provide triage, diagnosis and treatment to some acute presentations to eye departments. In the UK there are several nurse only acute eye services staffed by Nurse Practitioners who manage the majority of acute presentations and only refer a small number into NHS ophthalmology services. This could be achieved in NZ with more NP appointments in larger metropolitan areas.
7. AMD – provide a service to patients and relieves some of the workload of ophthalmologists by providing education etc.
8. Retinopathy of prematurity screening – nurses are trained to use the retcam by paediatric ophthalmologists. They visit neonatal units and using the retcam take photographs of the retina of prem babies which is reviewed by ophthalmologists; this is a very cost effective service in terms of utilising the skills of ophthalmic nurses and ophthalmologist time.
9. Administration of botulinum toxin therapy for blephorospasm etc. This again relives the workload of the ophthalmologist.
Appendix 8: The eye health clinical scenarios/pathways (prepared by Professor Charles McGhee and Sue Raynell- review team members)

Note: electronic copies available
OPHTHALMOLOGY: DRAFT MEDICAL RETINA AMD PATIENT PATHWAY

FUNCTIONAL ASSESSMENTS
1. Visual Acuity (conducted at each visit)

OBJECTIVE STRUCTURAL ASSESSMENTS
1. OCT examination (excluding myopic retinopathy with a spectral domain OCT)
2. Fluorescein angiography (at diagnosis)
3. Indocyanine green angiogram if no response to initial treatment to evaluate posterior choroidal neovascularization

TREATMENT
1. Intravitreal injection of anti-VEGF agent by an experienced Ophthalmologist conducted in accordance with the RANZCOG guidelines

Definition of wet AMD is based upon the following criteria after clinical examination:
- The presence of blood or discrete due to a choroidal neovascular membrane
- Fibrinopurulent exudates in association with subretinal fluid or RPE pathology
- Other angio-architectural changes not routinely required for the diagnosis, but necessary if there is any suspicion of a masquerade syndrome (such as BRVO, CSR, retinal vein occlusion, etc.)

Notes may be hospital of community based.

Patient has been enrolled in the system. They can access 3 years and possibly more and out of regular review and retreatment visits.

At stage of the stage AMD is defined as one or more of:
- Established thickening of the choriocapillaris involvement (OCT examination required)
- Outer retinal atrophy with central macular involvement (OCT examination required)
- CSR in the presence of the above
- Echogenic fixation (often associated with @603)
- AMD becomes more complicated with bilateral disease is present and each eye is in phase of disease activity
Glaucoma Pathway: KEY ASPECTS

- ONLY for stable/standard patients
- Alternate Consultant/Nurse Practitioner and Nurse Specialist Monitoring Clinic Appointments
- Appointments at regular intervals as per agreed guidelines
- GPs responsible for all repeat prescriptions
- Improved Referral information to minimise unnecessary
Referral?

Stream A

Stream B

Letter triaged

Assigned

Pt attends

Nse does V/A

Further investigation

Investigation done (OCT)

Pt S/B

1. Active

2. Chronic

3. Inactive/

- Atypical

- Cons/NP

- Assigned

- Pt attends clinic & waits

- Nse does V/A

- Further investigation

- Investigation done (OCT)

- Pt S/B

- 1. Active

- 2. Chronic

- 3. Inactive/

Mild Active

Severe active

Full medical workup

Further appts dependent on

Further appts dependent on

Attend combined ophthalmology-immunology clinic

Stream A- 90+% Acute

- Self presented
  - Previous uveitis episode
  - Referral

Stream B-

- Referral by GP other specialists (outside ophthalmology)

- Patients on immunosuppression, initially seen weekly if severe and need a minimum of 3 monthly appts., even if disease is stable, to monitor disease & safety of meds.

- Appointments are gradually stretched out until stable / quiescent

- 3. Patients not in systemic immunosuppression but with mild chronic disease tend to be seen about every 6 months, depending on type of uveitis
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>VA</td>
<td>Visual Acuity</td>
</tr>
<tr>
<td>DR</td>
<td>Diabetic Retinopathy</td>
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<tr>
<td>OCT</td>
<td>Ocular coherence tomography (investigation/technical examination)</td>
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<tr>
<td>VMT</td>
<td>Vitreo-macular traction</td>
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<tr>
<td>AMD</td>
<td>Age-related Macular Degeneration</td>
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<tr>
<td>BRVO</td>
<td>Branch retinal vein occlusion</td>
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<tr>
<td>LVA</td>
<td>Low vision assessment</td>
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<tr>
<td>HVF</td>
<td>Humphrey Visual Field (investigation/technical examination)</td>
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<tr>
<td>IOP</td>
<td>Intraocular Pressure</td>
</tr>
<tr>
<td>HRT</td>
<td>Heidelberg Retinal Tomograph (investigation/technical examination)</td>
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<tr>
<td>NS</td>
<td>Nurse Specialist</td>
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<tr>
<td>NP</td>
<td>Nurse Practitioner</td>
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<tr>
<td>RAPD</td>
<td>Relative Afferent papillary defect</td>
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<td>UA</td>
<td>Unaided</td>
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<td>PH</td>
<td>Pin Hole</td>
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<tr>
<td>OpT</td>
<td>Optometrist</td>
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<tr>
<td>FFA</td>
<td>Fluroscin Angiography (investigation/technical examination)</td>
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<tr>
<td>PRP</td>
<td>Pan Retinal Photocoagulation (procedure)</td>
</tr>
<tr>
<td>IVT</td>
<td>Intravitreal Triamcinolone injection (procedure)</td>
</tr>
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<td>PRN</td>
<td>As needed</td>
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