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Consultant Ophthalmologist
Greenlane Hospital
Auckland

Saturday, June 9, 2018
8:20 - 8:35 Diabetic Retinopathy - So What's New?
Diabetic Retinopathy: so what's new in 2018?
Press release

Diabetes no longer leading cause of blindness thanks to screening and new treatments

From: Public Health England
First published: 17 March 2014
Last updated: 17 March 2014, see all updates
Part of: Public health

For the first time in over 50 years diabetic eye disease is no longer the leading cause of blindness in adults of working age.

A new study carried out in affiliation with Moorfields Eye Hospital and UCL Institute of Ophthalmology reports on the causes of blindness in England and Wales in working age adults comparing data from 1999 to 2000 with 2009 to 2010.

According to the research, with the prevalence of diabetes increasing during this period, a similar increase may have been expected in the rates of diabetic eye disease. However, the study found that the rate of diabetic eye disease leading to blindness dropped by 33% during the period.
Basics.
Pathogenesis.

- Capillary wall Damage
- Capillary Closure. ISCHAEMIA
- ↑Capillary permeability: OEDEMA
Pathogenesis.

Capillary wall Damage → Capillary Closure. ISCHAEMIA

↑Capillary permeability: OEDEMA

Endothelial Growth factors
Pathogenesis.

- Capillary wall Damage
- Capillary Closure. ISCHAEMIA
- Fibrovascular proliferation
- ↑Capillary permeability: OEDEMA
- Endothelial Growth factors
Pathogenesis.

Capillary wall Damage  →  Capillary Closure. ISCHAEMIA  →  Fibrovascular proliferation  →  ADVANCED RETINOPATHY

Endothelial Growth factors

Capillary wall Damage  →  ↑Capillary permeability: OEDEMA
No Diabetic retinopathy

Proliferative DR

Severe Non proliferative DR

Moderate Non proliferative DR

Mild Non proliferative DR
No Diabetic retinopathy

- Proliferative DR
- Severe Non proliferative DR
- Moderate Non proliferative DR
- Mild Non proliferative DR
Capillary wall Damage → ↑Capillary permeability: OEDEMA → Diabetic Maculopathy

Endothelial Growth factors
Capillary wall Damage → ↑Capillary permeability: OEDEMA → Diabetic Maculopathy

Endothelial Growth factors
Capillary wall Damage

↑Capillary permeability: OEDEMA

Diabetic Maculopathy

Endothelial Growth factors
Capillary wall Damage → Capillary Closure. ISCHAEMIA → Fibrovascular proliferation → ADVANCED RETINOPATHY

↑ Glucose, ↑ BP

Capillary wall Damage → ↑ Capillary permeability: OEDEMA → Diabetic Maculopathy

Endothelial Growth factors
Treatment

Capillary wall Damage

Capillary Closure. ISCHAEMIA → Fibrovascular proliferation

Endothelial Growth factors

↑ Capillary permeability: OEDEMA

↑ Glucose, ↑ BP

Capillary wall Damage

ADVANCED RETINOPATHY

LASER

Diabetic Maculopathy
Traditional Approach:  
(1990- 2014)  

1. Optimise control.
Traditional Approach: (1990-2014)

1. Optimise control.
2. Laser treatment
Diabetic eye clinic.

**Laser:** Yes/No
Todays approach:

1. “Personalised” care (Big Data).
Todays approach:

1. “Personalised” care (Big Data).
2. AntiVEGF treatment
Progression of Diabetes Retinal Status Within Community Screening Programs and Potential Implications for Screening Intervals

RESULTS

In total, 354,549 patients were observed for up to 4 years

Figure 1—Progression to referable eye disease

A. No DR

C. Mild DR Both eyes
The development of “Mild” non proliferative diabetic retinopathy is a significant event representing end organ damage.
Predicting Development of Proliferative Diabetic Retinopathy

1% Increase in HbA1C 14% increase in risk of progression to PDR.

HbA$_1$c 12%

HbA$_1$c 8%
Every 1% ↓ HbA₁c = 10% ↓ risk of progression to PDR
Predicting Development of Proliferative Diabetic Retinopathy

Diabetes Care 36:1562–1568, 2013

HbA1c 12% AND foot ulcers.

HbA1c 12%
6% HbA1c 12%
The RESTORE Study

Ranibizumab Monotherapy or Combined with Laser versus Laser Monotherapy for Diabetic Macular Edema
Treatment of diabetic retinopathy and maculopathy.

Capillary wall Damage → Capillary Closure. ISCHAEMIA → Fibrovascular proliferation → ADVANCED RETINOPATHY

↑ Glucose, ↑ BP → Capillary wall Damage

Endothelial Growth factors

LASER

Diabetic Maculopathy

↑ Capillary permeability: ODEMA
Treatment of diabetic retinopathy and maculopathy.

- Capillary wall Damage
- Capillary Closure. ISCHAEMIA
- Fibrovascular proliferation
- Anti VEGF
- ADVANCED RETINOPATHY
- ↑ Glucose, ↑ BP
- Capillary wall Damage
- ↑ Capillary permeability: OEDEMA
- Diabetic Maculopathy
4 antivegf injections (avastin).
4 antivegf injections (avastin).

7 antivegf injections (avastin).
Aflibercept, Bevacizumab, or Ranibizumab for Diabetic Macular Edema

The Diabetic Retinopathy Clinical Research Network*

Which antiVEGF and Protocol “T”
Which antiVEGF and Protocol “T”
Protocol I: VA outcomes at 5 years. RbZ groups

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<th>Year 3</th>
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<th>Year 5</th>
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The numbers game.

- Each patient requires on average 8 treatments in year 1, 2 in year 2 and 1 in year 3.

- 100 patients: 800 treatment episodes in year 1
  1100 treatment episodes year 3 and beyond.
'People have been harmed': Delays put over 1350 eye patients at clinical risk

5 May, 2017 5:00am

Auckland District Health Board provides most outpatient ophthalmologic services for the region. Photo / Stuart Munro

By: Nicholas Jones
Political reporter, NZ Herald
nicholas.jones@nzherald.co.nz @nickjonesriver

More than 1350 Aucklanders with serious eye conditions have had lengthy delays in their care, an Ombudsperson report will find.

The report will recommend Aucklanders in urgent need of eye care be seen within hours of booking, and then transferred to hospital if necessary.

The report notes there were 1475 urgent and non-urgent eye patients in Auckland District Health Board's ophthalmology clinics in April 2017.

The Ombudsperson recommended that urgent patients be seen within hours of booking, and then transferred to hospital if necessary.

The report also found that patients who are not seen within the recommended times are at risk of harm.

The Ombudsperson found that the Auckland District Health Board had not complied with its legal obligations to provide timely, quality and compassionate care to patients.

The report recommends that the Auckland District Health Board develop a plan to address the issues raised by the Ombudsperson.

The Auckland District Health Board has 21 days to respond to the Ombudsperson's report.
Small improvements in a person's diabetic control can pay big dividends over time.

Mild NPDR is not MILD, it represents end organ damage.

Outcomes from diabetic eye disease have improved hugely in the past 5 years.

But treatment is, at least in the first 2 years, more intensive for the patient and the provider.