Diabetes and the Eye

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The findings and conclusions in this presentation are those of the author and do not necessarily represent the views of the CDC.
26 million with Diabetes

79 million with Prediabetes

FOCUS ON EYE HEALTH: A National Summit
1 in 3 US Adults Will Have Diabetes in 2050…

- If current trends continue
  - Americans are living longer
  - People with diabetes also are living longer
  - Increases in minority groups at high risk for type 2 diabetes
  - New cases of diabetes

- 1 in 10 U.S. adults have diabetes now

Boyle, Thompson, Gregg, Barker, Williamson. Population Health Metrics 2010: 8:29
(22 October 2010)
Wise Words

“Diabetes can be fairly described as a “whole life” disease in that few areas of one’s life is not either influenced by or implicated in the manifestation and control of the disease”.

Leandris Liburd, *Diabetes and Health Disparities*
Vision Impairment and Blindness

- Diabetic retinopathy is the leading cause of new cases of legal blindness among adults aged 20–74 years in the US.

- Diabetes-related blindness is a personal and societal burden and costs the nation about $500 million annually.
Number and percentage of adults aged ≥18 years with self-reported diabetes and visual impairment
National Health Interview Survey, United States, 1997–2010

Projection of Diabetic Retinopathy: 2005–2050

Arch Ophthalmol Dec 2008;126(12):1740-1747
Ocular Complications of Diabetes

• All eye structures are susceptible to the harmful effect of diabetes

• Retinal complications
  – Nonproliferative Diabetic Retinopathy
  – Proliferative Diabetic Retinopathy
  – Diabetic Macular Edema

• Other ocular findings
  – Cataract, Glaucoma
Risk Factors for Diabetic Retinopathy

- Duration of diabetes
- Severity of baseline retinopathy
- Gender, race/ethnicity
- Hyperglycemia
- High blood pressure
- Hyperlipidemia
Progress in Control: Diabetes Outcomes

- Vision Loss (1997–2009) ↓ 26%
- Amputation (1995–2009) ↓ 52%
- End Stage Renal Disease (1995–2008) ↓ 34%
- CVD Hospitalization (1997–2009) ↓ 10%
- Total Hospitalization (1995–2009) ↓ 41%

www.cdc.gov/diabetes
## Health Disparity and Diabetic Retinopathy

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AJO. In Press.
We’ve got a ways to go!

• Diabetes care remains suboptimal
• Risk factors for complications are too prevalent
• Rates of complications and death are too high
• Increasing incidence of diabetes
• Disadvantaged populations continue to be disproportionately affected
Treatment of Diabetic Retinopathy

• Primary prevention:
  – Glycemic, hypertension, and lipids control

• Secondary: surgical treatment.
  – Laser photocoagulation, vitrectomy

• Rehabilitation:
  – Low-vision aids, devices for insulin administration, etc.
Age-adjusted* percentage of adults aged ≥18 years with self-reported diabetes who reported annual contact with an eye care provider, by visual impairment (VI) status: National Health Interview Survey, United States, 1997–2010

*On the basis of the 2000 U.S. standard population

Source: CDC, 2012
A Public Health Approach

Problem

Surveillance
How big is the problem?

Risk Factors
Who is most Affected?

Intervention
Evaluation
What works?

Implementation
How do we do it?

Response

FOCUS ON EYE HEALTH: A National Summit
Summary of Public Health Interventions

- Surveillance
  - NHANES
  - BRFSS
  - SEARCH for Diabetes in Youth
- Health economics
  - Cost of DR and cost-effectiveness model
- Insight – Network study on screening for DR
- Programs/integration in state health depts
Vision

A world free of the devastation of diabetes