Diabetic Retinopathy
The scope of the challenge today and in the next twenty years

DR-NGOs meeting, Bangkok, 6 Apr 13
Serge Resnikoff MD PhD
Estimating DR magnitude

Prevalence among people with Diabetes:

- Any DR = 35.4%
- Vision Threatening DR = 11.7%
- Proliferative DR (PDR) = 7.2%
- Macular Oedema (DME) = 7.5%

- Based on meta analysis by JW Yau

Example for 1 million population

<table>
<thead>
<tr>
<th>DM prevalence</th>
<th>4.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>1'000'000</td>
</tr>
<tr>
<td>No of Diabetics</td>
<td>40'000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DR Type</th>
<th>Prev</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any DR</td>
<td>35.4%</td>
<td>14’160</td>
</tr>
<tr>
<td>Vision Threatening DR</td>
<td>11.7%</td>
<td>4’680</td>
</tr>
<tr>
<td>Proliferative DR</td>
<td>7.2%</td>
<td>2’880</td>
</tr>
<tr>
<td>DME</td>
<td>7.5%</td>
<td>3’000</td>
</tr>
</tbody>
</table>
DR Management

Requires a comprehensive care system
Ethical issues
Number of persons with diabetes in the world, 1995 – 2030 (2004 estimates)

Developed
Developing
World

King & Aubert, 1998
Wild & Roglic, 2004
Number of persons with diabetes (millions)

Wild & Roglic, 2004
Estimates and projections of global diabetes prevalence

David R. Whiting et al., 2011
IDF Atlas, 2012 update

**World**
- 371 M people living with diabetes
- 8.3% prevalence
- 50% undiagnosed

**North America and Caribbean**
- More healthcare dollars were spent on diabetes in this region than any other.
- 1 in 10 adults in this region has diabetes.
- 10.6% prevalence
- 29.2% undiagnosed

**Middle East and North Africa**
- 1 in 9 adults in this region has diabetes.
- More than half of people with diabetes in this region don't know they have it.
- 34 M people
- 52.9% undiagnosed
- 10.9% prevalence

**Europe**
- 1 out of every 3 dollars spent on diabetes healthcare was spent in this region.
- 21.2 million people in this region have diabetes and don't know it.
- 55 M people
- 36.6% undiagnosed
- 6.7% prevalence

**Western Pacific**
- 1 in 3 adults with diabetes lives in this region.
- 6 of the top 10 countries for diabetes prevalence are Pacific Islands.
- 70 M people
- 51.1% undiagnosed
- 8.7% prevalence

**South and Central America**
- Only 5% of all healthcare dollars for diabetes were spent in this region.
- 1 in 11 adults in this region has diabetes.
- 26 M people
- 45.3% undiagnosed
- 9.2% prevalence

**Africa**
- Over the next 20 years, the number of people with diabetes in the region will almost double.
- This region has the highest mortality rate due to diabetes.
- 15 M people
- 81.2% undiagnosed
- 4.3% prevalence

**South-East Asia**
- 1 in 5 of all undiagnosed cases of diabetes is in this region.
- 1 in 4 deaths due to diabetes occurred in this region.
- 132 M people
- 57.9% undiagnosed
- 8.0% prevalence

*All estimates are presented as comparative rates.*
More than 371 million people have diabetes.

TOP 10 COUNTRIES/TERRITORIES FOR PEOPLE WITH DIABETES (20-79 YEARS)

- China: 92.3 million
- India: 63.0 million
- USA: 24.1 million
- Brazil: 13.4 million
- Russian Federation: 12.7 million
- Mexico: 10.6 million
- Indonesia: 7.6 million
- Egypt: 7.5 million
- Japan: 7.1 million
- Pakistan: 6.6 million

IDF Atlas 5th ed.
# The Top 10s (prevalence %)

## Table 2.1. Top 10 countries/territories for prevalence* (%) of diabetes (20-79 years), 2011 and 2030

<table>
<thead>
<tr>
<th>COUNTRY /TERRITORY</th>
<th>2011 PREVALENCE (%)</th>
<th>COUNTRY /TERRITORY</th>
<th>2030 PREVALENCE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kiribati</td>
<td>25.7</td>
<td>Kiribati</td>
<td>26.3</td>
</tr>
<tr>
<td>Marshall Islands</td>
<td>22.2</td>
<td>Marshall Islands</td>
<td>23.0</td>
</tr>
<tr>
<td>Kuwait</td>
<td>21.1</td>
<td>Kuwait</td>
<td>21.2</td>
</tr>
<tr>
<td>Nauru</td>
<td>20.7</td>
<td>Tuvalu</td>
<td>20.8</td>
</tr>
<tr>
<td>Lebanon</td>
<td>20.2</td>
<td>Nauru</td>
<td>20.7</td>
</tr>
<tr>
<td>Qatar</td>
<td>20.2</td>
<td>Saudi Arabia</td>
<td>20.6</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>20.0</td>
<td>Lebanon</td>
<td>20.4</td>
</tr>
<tr>
<td>Bahrain</td>
<td>19.9</td>
<td>Qatar</td>
<td>20.4</td>
</tr>
<tr>
<td>Tuvalu</td>
<td>19.5</td>
<td>Bahrain</td>
<td>20.2</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>19.2</td>
<td>United Arab Emirates</td>
<td>19.8</td>
</tr>
</tbody>
</table>

*comparative prevalence

IDF Atlas 5th ed.
Number of persons with diabetes in the world, 1995 - 2030

- **Developed**
- **Developing**
- **World**

- **1995 - 2030**
  - Millions in 2012:
    - Developed: 171 Mo (2.8%)
    - Developing: 285 Mo (4.1%)
    - World: 371 Mo

- **2030**:
  - Predicted: 551 Mo (6.3%)

King & Aubert, 1998
Wild & Roglic, 2004


<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DM prevalence</strong></td>
<td>4.1%</td>
<td>6.3%</td>
</tr>
<tr>
<td><strong>No of Diabetics</strong></td>
<td>41 000</td>
<td>63 000</td>
</tr>
<tr>
<td>Any DR</td>
<td>14 514</td>
<td>22 302</td>
</tr>
<tr>
<td>Vision Threatening DR</td>
<td>4 797</td>
<td>7 371</td>
</tr>
<tr>
<td>Proliferative DR</td>
<td>2 952</td>
<td>4 536</td>
</tr>
<tr>
<td>DME</td>
<td>3 075</td>
<td>4 725</td>
</tr>
</tbody>
</table>
Pan Retinal Photocoagulation  

Carpet-Bombing  

Primary prevention is critical
World
WHO 2012 data

- DR: 1%
- Cat: 33%
- Other: 24%
- RE: 42%

Diabetes prev: 4.1%

Chiapas, Mexico
DR-RAAB 2012 data

- URE: 34%
- Other: 12%
- DR: 6%
- Cat: 48%

Diabetes prev: 21%

WHO 2012 data

- World
- Diabetes prev: 4.1%

Chiapas, Mexico

- DR-RAAB 2012 data
- Diabetes prev: 21%