

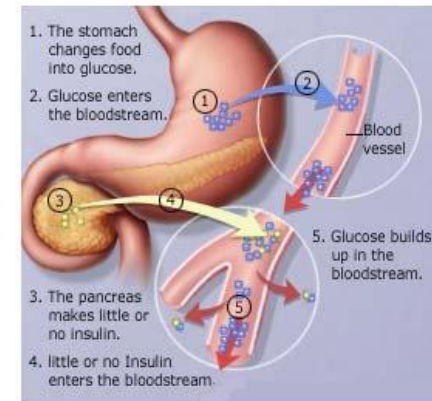
# Diabetes, a Health Risk in Our Community

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# Diabetes – The Basics

- ◆ Diabetes Mellitus is a group of diseases causing a consistently abnormally elevated blood sugar levels.
- ◆ Either not enough insulin being produced or cells are not responding to the insulin.
- ◆ Type I (juvenile) vs Type II (Adult onset – more common)



# Some Facts about Diabetes

1. Diabetes is a **silent epidemic** and according to WHO there are **246 million people in the world living with diabetes**. This is almost 6% of the world's adult population.
2. Diabetes in **Asians is five times** the rate of the white population
3. India is the **diabetes capital** of the world. It is estimated that currently there are 40 million people with diabetes in India and by 2025 this number will swell to 70 million. This would mean every fifth diabetic in the world would be an Indian
4. **Obesity and insulin resistance** are the main causes of diabetes increase.
5. Diabetes causes 6 deaths every minute and one in 20 deaths in the world is due to the condition. Every year it is estimated that **3.2 million people in the world die** due to the diabetes or its related causes.

# More Facts about Diabetes

6. Diabetes is an important 'silent killer disease' as there is usually no early symptom of the disease. The most common early symptoms are **thirst and frequent urination**.
7. Almost **90 to 95% of diabetes is of type 2** or adult onset. Type 1 or juvenile diabetes affects 70,000 children under the age of 15 years every year.
8. The major cause of increase in the incidence of diabetes is a **sedentary lifestyle and dietary changes**. Exercise and diet can either reduce or delay the incidence of diabetes by over 50%.
9. Diabetes is the number one cause of **kidney failure** in the world. Besides this every year it is responsible for 5% or 5 million blindness in adults and one million limb amputations. Diabetes is also an important cause of heart disease, stroke and cataracts.
10. The current cost of treating diabetes and its complications in the world is estimated at **US \$ 215 - 375 billion** annually. The disease is growing fastest in developing countries where there are more people in the lower and middle-income groups.

# Diabetes a Global Epidemic

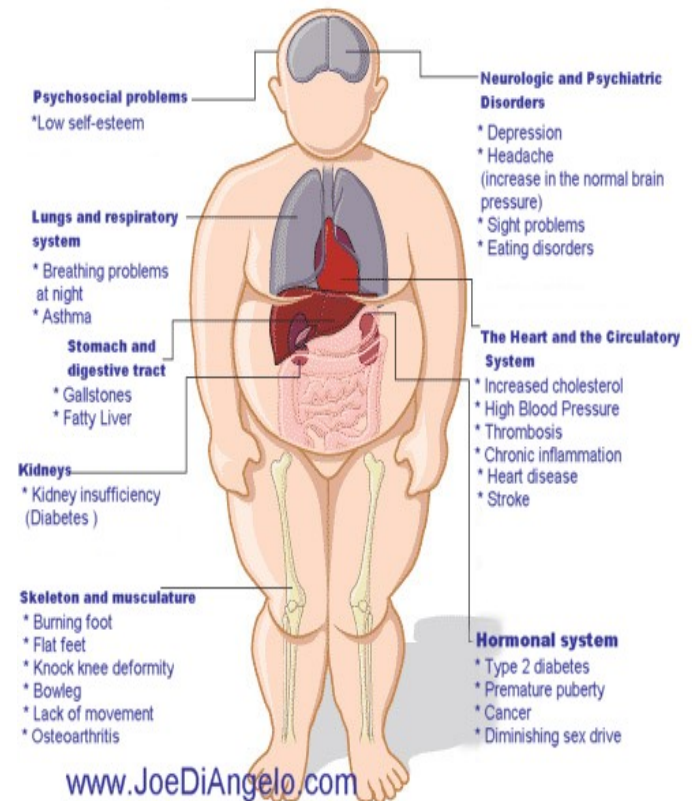
◆ Number of people with diabetes (age 20-79), 2010 vs 2030

COUNTRY/TERRITORY	2010 MILLIONS	COUNTRY/TERRITORY	2030 MILLIONS
1 India	50.8	1 India	87.0
2 China	43.2	2 China	62.6
3 United States of America	26.8	3 United States of America	36.0
4 Russian Federation	9.6	4 Pakistan	13.8
5 Brazil	7.6	5 Brazil	12.7
6 Germany	7.5	6 Indonesia	12.0
7 Pakistan	7.1	7 Mexico	11.9
8 Japan	7.1	8 Bangladesh	10.4
9 Indonesia	7.0	9 Russian Federation	10.3
10 Mexico	6.8	10 Egypt	8.6

Source: IDF Diabetes Atlas, 4<sup>th</sup> ed

# Risk Factors for Diabetes

- ◆ If you have a parent or brother/sister with diabetes
- ◆ Have high blood pressure
- ◆ Have high cholesterol or triglycerides
- ◆ Gestational Diabetes or giving birth to a baby >9lbs
- ◆ High fat diet
- ◆ High alcohol intake
- ◆ Obesity or being overweight
- ◆ Sedentary lifestyle
- ◆ Ethnicity: African Americans, Hispanics, South Asians, Gujaratis
- ◆ Age > 45 y.o.



# Symptoms of Diabetes

- ◆ Unusual and frequent sense of thirst
- ◆ Frequent need to urinate
- ◆ Extreme feelings of hunger



**I'm thirsty**



# Diabetes Symptoms cont'd

- ◆ Unexpected and extreme weight loss



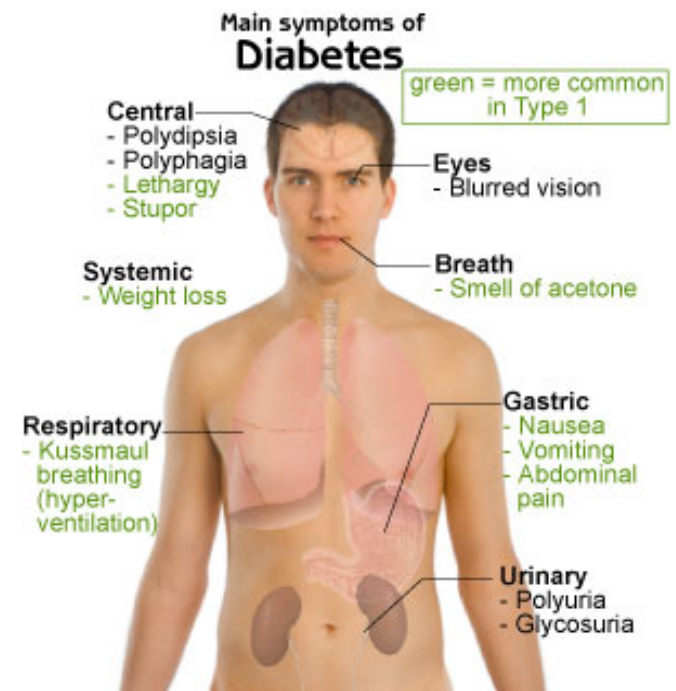
- ◆ Extreme feelings of fatigue

- ◆ Unusual irritability or agitation



# Advanced Diabetes Symptoms

- ◆ Infections that are frequent and long lasting
- ◆ Problems with vision, including blurred vision
- ◆ Open wounds that do not heal as quickly as they should
- ◆ Tingling or numbness in the feet and hands
- ◆ Problems with skin or mouth sores
- ◆ Acetone breath

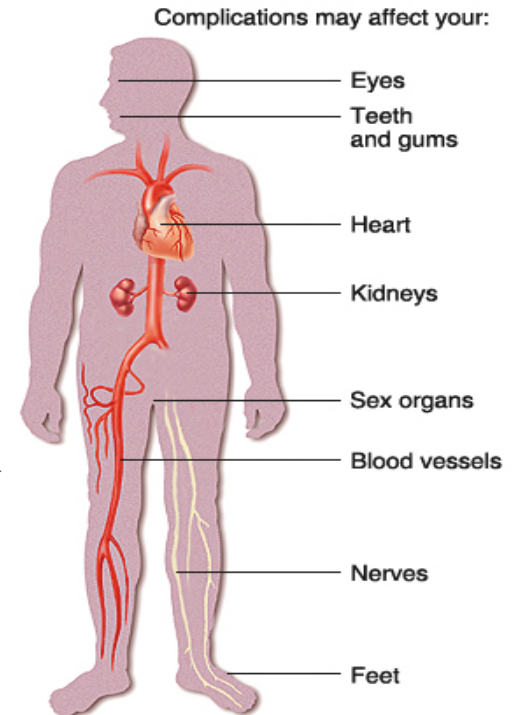


# Pre-Diabetes

- ◆ Pre-Diabetes – higher than normal blood sugar but not high enough to be diagnosed with Diabetes.
- ◆ You may have early stage Diabetes, especially if you have family history, are obese, sedentary lifestyle, and have a poor diet.
- ◆ Proper Diet and Exercise are your best measures against Diabetes

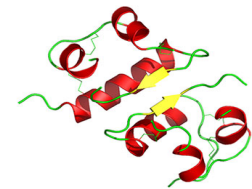
# Complications of Diabetes

- ◆ Leading cause of blindness
- ◆ Leading cause of kidney (renal) failure
- ◆ Leading cause of lower limb amputation
- ◆ Increases risk of Coronary Heart Disease and Stroke
- ◆ Nerve Damage, impotence, vascular disease



# Diabetes and Insulin

- ◆ Insulin is a hormone produced by the pancreas
- ◆ Enables the glucose to enter the cell for energy conversion
- ◆ Regulates blood glucose levels
- ◆ Why does just injecting Insulin artificially not solve or cure Diabetes?
- ◆ Insulin Resistance – the cell receptors stop responding
- ◆ Risks: Hypoglycemia, Injection, Allergy
- ◆ Soon Insulin Nasal spray



# How do you know if you have Pre-Diabetes?

- ◆ Do you have any Diabetes or Pre-diabetes Symptoms
- ◆ Glucometer Testing – finger prick testing
- ◆ Fasting Blood Glucose (Normal Range 4-6 mmol/L)
- ◆ Post-Prandial / After a meal (Normal 5-8 mmol/L)
- ◆ Hb1AC Test
  - ◆ Average blood sugar level for past 2-3 months
  - ◆ Measures what percentage of your hemoglobin is coated with sugar
  - ◆ Normal < 5.7%, Pre-Diabetes: 5.7 to 6.4%, > 6.5% = Diabetes)



# Diabetic Medication

- ◆ If exercise and diet do not work, medicine is the only option
- ◆ Glyburide or Metformin are the most commonly used primary medications
- ◆ Glyburide increases insulin output
- ◆ Metformin increases insulin sensitivity
- ◆ Diet and Exercise must be continued!



# Advanced Medicine

## ◆ Solfonyureas

- ◆ Glyburide/Diabeta
- ◆ Gliclazide/Diamicron

## ◆ Medlitinides

- ◆ Gluconorm (repaglinide)

## ◆ Biguanides

- ◆ Metformin



## ◆ Thiazolidinediones

- ◆ Avandia/rosiglitazone
- ◆ Actos/pioglitazone



## ◆ Alpha-glucosidase Inhibitors

- ◆ Glucobay/acarbose

## ◆ Future Medicines

- ◆ Glucagon-like peptide analogs

# If all fails then Insulin

- ◆ Until very recently only source was extract of the pancreas of pigs or cows, used safely for decades
- ◆ Biosynthetic human insulin made by recombinant DNA technology
- ◆ Types:
  - ◆ Rapid Acting – Humilin R, Novolin R, Humalog
  - ◆ Intermediate – Humulin N, Novolin N, Lente
  - ◆ Long Acting – Ultralente, Lantus, Levemir



# Prevent Diabetes with Diet

- ◆ Reduce or Stop sugar from corn syrup, pop, junk food, etc.
- ◆ Reduce fat, especially deep fried or foods high in saturated fats
- ◆ Overall Calorie reduction – Calculate your BMI
- ◆ Reduce food high on the Glycemic Index
- ◆ Chose whole wheat bread instead of white
- ◆ Increase fibre through fruits and vegetables
- ◆ Reduce processed foods high in bad ingredients
- ◆ Eat 5 times a day, 3 portioned meals with snacks, in between – increase you metabolism!



ADAM

# Exercise to Stop Diabetes!

- Aim to eventually be exercise for 30 minutes twice a day.
- Start slowly, work at your own pace
- Find a work out buddy
- Walking is excellent exercise!
- Stretching is very important
- Nothing beats YOGA!
- Invest in a trainer



# Herbal Options for Diabetes

- ◆ Gymnema Sylvestre (ayurvedic gurmar – sugar destroyer)
- ◆ Chromium picolinate and Vanadium
- ◆ Bitter Melon
- ◆ Billberry
- ◆ Fenugreek
- ◆ Ginseng
- ◆ Cassia or Cinnamon crushed
  - ◆ One study in Pakistan found a reduction in serum glucose, triglycerides, LDL in people with Type 2 diabetes



# Vitamins for Diabetics and Disease Prevention

- ◆ Good Multi-vitamin
  - ◆ Platinum Super Easy, Sisu, Progressive, any better quality
- ◆ Vitamin D 1000iu – 1000 to 3000iu per day (more in winter)
- ◆ Vitamin B Complex – 100mg time release
- ◆ Vitamin C – 1000 to 3000 mg per day
- ◆ Calcium/Magnesium – 500/133mg three times a day
- ◆ Omega 3 – high in EPA and DHA, Good quality, 600+ mg/per day
- ◆ CoEnzyme Q10 100mg – One to two a day
- ◆ Primrose, borage, and flax see oil twice a day for GLA and ALA



# Diabetes Management

- ◆ If you are a Diabetic, I want to emphasize the importance of taking your medication on a consistent basis
- ◆ Measure your glucose levels regularly and document
- ◆ See your physician every 6 months to 1 year
- ◆ Discuss your sugar levels and medications with your pharmacist
- ◆ Don't fall into complacency, DIET and EXERCISE!

# The Future of Glucose Testing

- ◆ Future Testing Methods:
  - ◆ Non-invasive using IR light, currents, ultrasound
  - ◆ GlucoWatch
  - ◆ Continuous Glucose Testing
  - ◆ Tissue Photography
  - ◆ Wireless
  - ◆ Nanotech



# Questions and Answers

Please feel free to ask any questions you may have.

Thank you for attending this presentation.