Pre-Diabetes and Metabolic Syndrome
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Prediabetes: Definition
Blood glucose levels higher than normal
Not high enough for diabetes diagnosis
Phase that precedes actual diabetes
Estimated 79 million adults in US with Prediabetes

70% of people with prediabetes will progress to Type II DM

Diabetes progression:
Obesity-Metabolic Syndrome
Hyperinsulinemia- Insulin Resistance
Prediabetes
Type II DM

Natural History of Type II DM

Complications:
Macrovascular- Heart disease and Stroke
Microvascular- Retinopathy, Neuropathy, and Microalbuminuria

Factors aiding progression of Type II DM

Early detection of Type II DM:
Gradual increases in glucose levels have been detected as early as 13 years prior to a diagnosis of diabetes.

Diabetes Statistics:
29.1 million individuals in the U.S. have diabetes
~50% of individuals > 60 y have DM or IFG
$245 billion in total medical costs and lost work and wages
Seventh leading cause of death in 2010
Globally, ~ 285 million adults (6.4%) have diabetes
Expected to rise to 439 million (7.7%) by 2030

Type II DM Pathophysiology

Risk: DM risk increases with age
DM rates and race/ethnicity
Obesity Alcohol use
Poor dietary intake Education level
Sedentary lifestyle
HTN
History of GDM
Prediabetes diagnosis:
Fasting plasma glucose level of 100-125 mg/dL
Impaired two hour glucose tolerance test to value of 140-199 mg/dL after 75 g oral glucose
Hemoglobin A1C 5.7- 6.4%

Health risks and the metabolic syndrome:
Metabolic syndrome - abdominal obesity, high triglycerides, low HDL cholesterol
Non-modifiable risks- age, gender, ethnicity, family history
Other risks- bone loss, HTN, cancer, fatty liver, recurrent pre-eclampsia, diabetes
Increased risk for HTN and adverse cardiac events
Obesity increases risk for metabolic syndrome
Increased risk for macrovascular events- ASCVS screening tool

ASCVD risk estimator calculator

Prevention:
Lifestyle interventions- Diet like Dash Diet, Mediterranean style diet
Weight management- weight loss recommended
Drink plenty of water
Stress reduction
Physical activity- At least 150 minutes per week of aerobic activity or walking. Longer, low intensity exercise can be just as effective as shorter, high intensity exercise
Find and exercise you like and will do regularly

Medication for Prediabetes-
Metformin has been shown to prevent or delay the onset of diabetes by 31%, but lifestyle intervention (diet and exercise) reduced it by 58%
Statins and other cholesterol medicines are helpful to reduce risk of cardiovascular events
Medication for Hypertension-
There is a strong relationship between metabolic syndrome and the development of hypertension.
Lifestyle interventions are first line, but if they are insufficient, start antihypertensives.
New guidelines updated 2014 (JNC8) for treatment
Use whatever it takes to meet BP goals

Group-based educational interventions

Culture-specific interventions

Surgical Interventions