Metabolic Syndrome	
Is	mix of multiple metabolic disorders increasing the risks so many diseases (CVS, DM …)
Obesity	Is only one block of MS
Common Symptoms	-**Obesity** -**CVS**: Hypertension & AS -**renal** disorders -**reproductive**:(females): Polycystic ovarian syndrome, Impaired ovulation and fertility & Irregular menstruation -**ECS**: DM, Hyperglycemia, Low blood HDL cholesterol, High blood triglycerides, hyperinsulinemia & Insulin resistance -**GIT**: Nonalcoholic steatohepatitis (fatty liver disease - due to impaired lipid metabolism) -**tumors**: due to obesity (eso, colon, rectum, liver & gall bladder) [obesity induced cancer-death is 15% men, 20% women]
Risk	-Hypercortisolism (Steroid use/Cushing's disease) -Meds (Rifampicin, isoniazid…) -Mutations in insulin receptor -Obesity -OH -potato life -Smoking
Insulin Resistance	-as Compensatory mechanism, hyperinsulinemia causes down regulation of insulin receptors or natural defect in receptors **Causes** -Hydrolysis of stored fat (by lipase), thus high blood FFA -less glc cells uptake (hyperglycemia) -less glycogenesis (hyperglycemia)
Dyslipidemia	-is: excessive FFA (released by fat hydrolyzing) are released as VLDL right into the blood & lessening blood HDL -strongly related to MS -early indicator of insulin resistance -Liver fat plays a major role in it (due to insulin resistance)
Markers	-Lipoproteins (LDL, HDL) -Adipokines (Leptin, adiponectin) -infl markers (c-reactive pr, TNF, IL6/8) Hemostatic marker (Plasminogen activator inhibitor-1)

Diagnosis	**According to WHO** -pt must have DM, Impaired glc tolerance & Insulin resistance -PLUS two of those: Hypertension, Dyslipidemia, obesity & Microalbuminuria **According to NCEP & ATP** (National Cholesterol Education Program & Adult Treatment Panel) -pt must have 3 of: Waist circumference(wide flanks), high blood Triglycerides, low blood HDL, BP(130/ 85), FPG(>100)
Managing	**Primarily** -Lifestyle changes -BMI < 25 -exercises -Weight reduction -Reduced intake of calories and fats -Smoking cessation **Secondarily** -meds for current symptoms -BP (anti-hypertensives) -Lipids (statins, fibrates) -glc (metformin, TZDs) -Aspirin (CVD prevention)

Lessening BP		
What to do	**Target**	**Result**
Weight loss	Maintain healthy body after weight loss	5-10 drop in BP for every 10K loss
Healthy diet	Fruits, veges, low fats	10-15 drop in BP
Na restriction	<2.5g/day	5 drop BP
Exercises	30m a day, everyday of the week if possible	5-10 drop
Goal	< 130/80 mmHg	
Meds	-Low dose diuretics -ACE inhibitor -Aspirin: Daily low dose aspirin (treat clots & protective)	

Pharma	
Metformin	-causes hypoglycemia by inh gluconeogenesis -in DM hepatic glucogenesis is always active due to insulin resis. -Reduces lipid synthesis in the liver
TZD	-Thiazolidinediones -treats DM2 & insulin resistance -activate PPAR in adipose tissue (transcription of adiponectin)
Adiponectin	reduces the fat content of the liver and enhances insulin sensitivity
Fibrates	-causes hypolipidemia -Activate the transcription of: PPARα (Peroxisome proliferator activated receptor) (causes lipid degradation & uptake by the cells) **activates** -Carnitine (which is palmitoyl transferase - enhances FA uptake into mitochondria) -Lipoprotein Lipase -apoAI and apoAII protein synthesis (major proteins in HDL)