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**LIPIDS**

Reduction in heart disease 1 percent for each 1 mg/dl decrease in LDL

Reduction in heart disease 3 percent for each 1 mg/dl increase in HDL

Populations with LDL < 100 have markedly decreased incidence of heart disease as do populations with hdl near 100

Statins lowers LDL cholesterol @40%, triglycerides 20% percent and raises HDL @10%. Doubling of dosage lowers LDL an additional 7% (rule of 7)

5mg crestor=10mg lipitor=20mg zocor=40mg pravachol and mevacor=80mg lescol.

1% of patients on statins have liver dysfunction which is generally transient when drug is discontinued and 1/1000 to 1/10000 patients can have rhabdomyolysis. Pravachol which is water soluble and not metabolized through P 450 pathway has the fewest drug interactions.

Crestor unlike the lipophilic drugs(lipitor,zocor,mevacor,lescol) is also water soluble and is not metabolized through the P 450 pathway . Some patients on crestor at the highest dosage develop mild tubular proteinuria which is generally transient and not associated with renal insufficiency. This is also seen with other statins.

Three papers indicate marked cardiovascular benefit from reducing ldl chol to values < 70 which has led to new guidelines recommending ldl in high risk patients to be lowered near 70. A paper by Dr Nissen, an imaging study, called the reversal trial revealed that patients on 80 mg of lipitor had a decrease in ldl chol from 150 to 79 mg/dl whereas patients on pravachol 40 mg had decrease of ldl chol only to 110 from 150 mg/dl with stabilization of atherosclerosis on lipitor(-.4%), but progression on pravachol (+2.7%). CRP also lowered more significantly in the group on high dose lipitor vs the pravachol cohort. Also, a paper by Cannon, a clinical outcomes trial, called the prove-it trial after myocardial infarction revealed reduced cardiovascular events 16% even within the first 30 days of therapy and death 28% in the group on 80mg of lipitor (ldl 62) vs 40 mg of pravachol (ldl 95) although crp not significantly different. Also, another more recent radiographic study by Nissen called the Asteroid trial utilizing 40 mg of crestor for 2 years raised hdl to 49 from 43(15%) and lowered ldl from 130 to 61and actually showed a marked regression of atherosclerosis on IVUS in patients with known CAD of @ 7% . The achieved ldl and hdl levels were the most prominent ever shown in prior statin atherosclerosis progression trials.

Average LDL in naive patients is 140 with first myocardial infarction.

Statins markedly lower CRP a marker for cardiac risk and improve endothelial dysfunction. Other drugs that do the same are the fibrates, ace inhibitors, arbs, tzd class and glucophage in diabetics as well as high dosages of ASA but not standard dosages of asa or plavix. Smoking, estrogen, fatty liver, infection and inflammation all raise crp increasing the risk for cardiac risk.

Goals in high-risk patients are ldl chol < 70 and triglycerides < 150 with HDL > 40 in men and > 50 in women.

Insulin resistance syndrome occurs in 25% of the population and is diagnosed by 3 of the five following characteristics:

abdominal obesity: waist > 40 in in men and 35 in in women(40%)

blood pressure > 130/85(25%)

fasting glucose > 100(20%)

triglycerides > 150(33%)

HDL below 40(35%)

Patients with insulin resistance have double the risk of cardiovascular disease and death. Try > 200 associated with ^ compact ldl and <100 no ^ compact ldl but 100 -200 try in gray zone although if try < 150 then only 20% have compact ldl .Atherogenic dyslipidemia common in diabetics includes small dense ldl particles, decreased hdl and ^ tryglyceriedes.

Cholesterol absorption inhibitor Zetia gives further 15- 20% reduction in ldl chol and slight reduction in try when added to a statin and does not affect fat soluble vitamins or have significant further side affects. Vytorin is a combination of zetia +zocor. It is probably safe to add zetia to a fibrate but drug levels higher of the fibrate. Studies being done to evaluate this interaction.

Tryglyceride best lowered with Niacin (niaspan) or the fibrates(tricor or lipid) which also will raise hdl but best drug to purely raise hdl when try normal or less than 200 is niacin(niaspan).Both classes of drugs convert compact ldl to fluffy ldl but niaspan only drug to reduce LPa. Tricor more effective than lipid to lower ldl and lipid more likely to raise blood levels of a statin through glucoronidation than tricor and potentially lead to drug interactions and cause rhabdomyolysis. Fibrates decrease tryglycerides @ 30%, lower ldl @10% and raise hdl @10% and reduce risk of cardiovascular disease @ 25% (VAHit Trial). Omega 3 fatty acids like omacor can also significantly lower triglycerides, but can significantly raise ldl chol. Exercise and weight loss also effective in raising HDL as well as smoking cessation. Alcohol, thiazide diuretics, steroid hormones(cortisone) and estrogens should be avoided in patients with ^ tryglycerides as levels of try > 1000 can be associated with pancreatitis. Cholestyramine(colestipol,welchol) and other resin binders although they lower ldl chol @15-20% can raise try and generally contraindicated in patients with ^ tryglycerides(mixed hyperlipidemia). Resin binders appear safe though in patients desiring fertility who need suppression in Ldl chol.

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