**4. Hyperlipidemia By Ilana Ramer Bass**

**Overview:**

*Elevated LDL is associated with CV events and mortality🡪 lowering LDL levels reduces CV events in patients with and without CVD; therefore our goal is to lower patient’s risk using therapeutic lifestyle changes and medications.*

**(a) Who to screen?**

* Screen average-risk men starting age 35 and women starting age 45 then repeat every 5 years
* Screen high risk population at age 25 in men and 35 in women then repeat every 3 years
* **Who is at “high risk?”**
  + Prior CVD event
  + Diabetes

Download the ASCVD risk calculator app to determine your patient’s risk score!

* + CKD (GFR <45)
  + Obesity
  + HTN
  + Smoker
  + Older age
  + Family history of CVD

**(b) Primary Prevention-** patients *without* known atherosclerotic disease

* Decide who to treat based on risk assessment
  + ACC/AHA Risk score >7.5% 10 yr risk🡪 treat (JAMA 2015)
  + No studies to compare low/moderate/high intensity dosing

**(c) Secondary Prevention-** patients with known atherosclerotic cardiovascular disease (CAD, carotid artery disease, PVD, AAA)

* Treat with high-intensity statin therapy
* Goal: 50% reduction in LDL
* Also treat with ASA

**(d) Statin therapy**

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| High intensity | Atorvastatin 40-80mg | Covered by NYS Medicaid |
| Rosuvastatin 20-40mg | Most potent |
| Moderate intensity | Lovastatin 40mg |  |
| Pravastatin 40mg | Lowest risk of myopathy  Covered by NYS Medicaid |
| Simvastatin 40mg |  |
| Atorvastatin 10-20mg |  |

* Side effects/ interactions:
  + Myopathy
    - Strategies to overcome myopathy: re-trial at lower dose, replete vitamin D, switch to lower risk statin, or every other day dosing
  + Interactions with cyclosporine, protease inhibitors, calcium channel blockers, gemfibrozil
* Other non-statin options (see EBM chart below):
  + PCSK9 inhibitors
  + Niacin
  + Ezetimibe
  + Cholestyramine (bile acid resin)- no role
  + Fibrates- no role outside of hypertriglyceridemia (FIELD Study, Lancet 2005)

**(e) Hypertriglyceridemia**

* Linked with CV events but no evidence of causation
* Treatment:
  + If only high TG, treat with fibrates if >500-1000
  + If high TG and LDL, treat with statin if TG <500, if >500 start fibrate and THEN statin once TG under control

**Treating HLD at IMA**

* Order: "Lipid panel"- does not need to be fasting!
  + *Non-fasting samples mostly elevate triglycerides, with minimal changes to TC or HDL and artificially lowers LDL; therefore if there is a high LDL on a non-fasting lipid panel then it is most definitely high!*
  + Total cholesterol: HDL ratio is most predictive (JAMA 2007, 2009) hence their use in the ACC/AHA risk calculator

**Social Determinants of Health:**

* Food access—access to affordable and **heart healthy foods—whole grains, beans, nuts, seeds, vegetables, fruit** 
  + Food desert- residents have low access to a supermarket or large grocery store
  + Food swamp- abundance of low nutrient foods (read: fast food) compared to healthy food options
  + **Fast food is high in** **saturated fats and oils** (butter, bacon, hamburgers, hotdogs, fried chicken, milk products, cookies, chips)

**Community Resources:**

Check out snaptohealth.org

* Supplemental Nutrition Assistant Program (SNAP)
* Farmer’s Markets- some accept SNAP/food stamps
  + Sinai’s Greenmarket – SNAP users get a $2 bonus for every $5 they spend

**Evidence Based Medicine:**

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| --- | --- | --- |
| **Study** | **Finding** | **Comments** |
| West of Scotland Coronary Prevention Study (WOSCOPs) (NEJM 1995) | Pravastatin reduced non-fatal MI rates and cardiac mortality in men with LDL >150. NNT 217.  22% reduction in all cause mortality of borderline statistical significance. |  |
| Scandinavian Simvastatin Survival Study (4S, Lancet 1994) | Patients with HLD and CAD; 4% reduction in total mortality at 5.4 years with significant reductions in CV events. | Established statins as standard of care in both primary and secondary prevention of cardiovascular events. |
| ODYSSEY Trial (NEJM 2015) | Patients at high risk for CV events, the use of monoclonal Ab alirocumab in addition to high intensity statin therapy resulted in additional 62% reduction in LDL. |  |
| AIM High Trial (NEJM 2011) | Compared simvastatin vs. simvastatin + niacin. Did significantly increase HDL levels but failed to reduce cardiovascular events. | No clinical benefit of niacin. |
| IMPROVE IT (NEJM 2015) | Compared simvastatin vs. simvastatin + ezetimibe. Reduction in CV mortality, major CV event or nonfatal stroke. NNT 50. |  |