South Dakota ACP

Deadwood, SD 2018

UPDATES IN CARDIOLOGY
Preventative Cardiology

- Cholesterol
- Hypertension
- Sudden Death
  - ICD
  - Lifevests
- Diet
- Exercise
- Stroke

Ray Allen, North Central Heart
Big Problem

- MI, strokes, heart failure
  - 2016 Data
  - 2.2 million hospitalizations
  - $32.7 billion
  - 415,000 deaths

- Deemed “largely Preventable” by CDC,

- Vital Signs Sept 6, 2018, CDC

-Ray Allen, North Central Heart
Guideline Based Therapy

• Volumes and Volumes
• 2017
  ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASP C/NMA/ PCNA
• Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults
• 248 pages
Strength and Evidence

- **Class 1**
  - Is recommended
  - Benefit>>>risk

- **Class 2a**
  - Is Reasonable
  - Benefit>>

- **Class 2b weak**
  - Benefit> or = risk
  - Might be reasonable

- **Class 3**
  - Risk>benefit
  - Should not
Evidence Level

- **LEVEL A**
  - High quality, more than 1 RCT

- **Level B-R**
  - Moderate >1 RCT or meta analysis of RCT

- **Level B-NR**
  - Moderate quality, but non-randomized or meta

- **Level C-LD**
  - Physiologic or mechanistic, or registry data limited design

- **Level C-EO**
  - Whatever the evidence, we know best
What is hypertension

- Normal < 120/80
- Elevated 120-129/>80
- Stage 1 130-139/80-89
- Stage 2 >140/>90
  - Based on 2 readings on 2 occasions
  - Provide patient with verbal and written report
  - Use appropriate size cuff
Best proven Non pharmacologic

- Weight loss: 1 mm Hg per kg, -5 mm Hg on SBP
- Healthy Diet: -11 mm Hg impact on SBP
- Decrease Na
- 90-150 min/wk, 65%-75% heart rate
- Dynamic exercise, 6 exercises, 3 sets of each, 10 reps/set 80% for one rep
- EtOH, decrease ≤ 2/men, 1/women
Treatment Options

• 1st line
  o Thiazide
  o Calcium Channel Blockers
  o ACE inhibitors or ARBs

• For stage 2 Htn initiation with 2 First line agents of different classes if BP.20/10 above BP target Class1, C-EO

• Single drug reasonable if stage 1 with dose titration 2a, C-EO
Caveats

- Avoid ACE inhibitors and ARBs in pregnancies or potential fertile females—teratogenic
- Use labetalol in pregnancy
  - Possible intrauterine growth restriction for metoprolol
  - Possible teratogenicity atenolol—conflicting data
- Simultaneous use of ACE + ARB and/or renin inhibitor is not recommended Class 3, LOE A

2017 Guideline
Table 17
Basic and Optional Laboratory Tests for Primary Hypertension

**Basic testing** Fasting blood glucose*  
Complete blood count  
Lipid profile  
Serum creatinine with eGFR*  
Serum sodium, potassium, calcium*

Thyroid-stimulating hormone  
Urinalysis  
Electrocardiogram

**Optional testing**  Echocardiogram  
Uric acid  
Urinary albumin to creatinine ratio

eGFR indicates estimated glomerular filtration rate.

[*] May be included in a comprehensive metabolic panel.
Screen for other CVD risk factors

- Current cigarette smoking and/or secondhand smoking
- Diabetes
- Dyslipidemia/hypercholesterolemia
- Obesity
- Inactivity/low fitness
- Unhealthy diet
- 2 or more risk factor greatly increases lifetime risk of CVD death, MI, fatal and non-fatal stroke

Wilson et al, Arch Int Med. 1999;159:1104-9
Cholesterol

• Treatment of dyslipidemia is a cornerstone of preventive cardiology, and reduction in low-density lipoprotein (LDL-C) in select populations reduces the risk of atherosclerotic CV events in both primary and secondary prevention
  
  o Pallazola, et al, ACC expert analysis panel: Major Dyslipidemia Guidelines and Their Discrepancies: A Need for Consensus, April 2018
Risk Calculators

- 5 current guidelines
- ACC/AHA Pooled Cohort Risk Equations
- CCS Framingham Risk Score
- VA-DoD recommends either PCRE or FRS
- ESC/EAS recommends SCORE, Systemic Coronary Risk Evaluation estimator
- US Preventative Services Task Force PCRE

Expert Analysis, JACC April 2018, Pallazola, et al
• **All calculators**
  - Age
  - Sex
  - Total Cholesterol
  - HDL
  - Systolic BP

• **Vary**
  - Ethnicity
  - Hypertension treatment
  - Diabetes
2017 ACC Recommendations for Non-Statin Therapy

• 2013 No evidence for non-statin drug with statins
• 2017 September revised pertain to patients with clinical ASCVD with or without co-morbidities on statin therapy for secondary prevention
• Proprotein convertase subtilisin/kexin 9 (PCSK9) inhibitors
• Ezetimibe considered if < 25% LDL reduction
• PCSK9 inhibitor if more than 25% reduction needed
• LDL goal <70 now for secondary prevention

• Ray Allen, North Central Heart
4 Statin Benefit Groups

- Adults >21 yrs with clinical ASCVD
- Adults >21 with LDL-C >190
- Adults 40-75
  - With diabetes and LDL between 70-189
- Adults age 40-75
  - Without diabetes or ASCVD
  - LDL-C between 70 and 189 mg/dL
  - Estimated 10 year risk >/= to 7.5%

JACC, Vol. 70, No. 14, 2017; Lloyd-Jones, et al. Writing committee
Trials to Justify

• FOURIER
  o Evolocumab Repatha
• IMPROVE-IT
  o Ezetimibe zetia
• SPIRE-2
• PCSK9 inhibitors lower LDL 55%-72%
• Old rule was approximately 20% RR reduction for every 40 mg/dl LDL-C reduction
• Now Relative Risk is .78 for LDL beginning at 63 for 3 trials of non-statin combined with statin
Treatment algorithm for hypercholesterolemia

Post-acute coronary syndrome/coronary artery disease patient with hypercholesterolemia

American College of Cardiology/American Heart Association Guidelines: Optimize statin therapy

Step 1: Statin

Step 2: Check low-density lipoprotein cholesterol (LDL-C)

Step 3: Add prescription as needed

LDL-C <70 mg/dl

Add ezetimibe

LDL-C ≥70 mg/dl

Statin + ezetimibe

Add proprotein convertase subtilisin/kexin type 9 inhibitors or other lipid-lowering therapy

LDL-C target <50 mg/dl for very high risk atherosclerotic cardiovascular disease

Robert S. Rosenson et al. JACC 2018;72:314-329

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<td>M</td>
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<td><strong>Total Cholesterol</strong></td>
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<td><strong>10 yr risk</strong></td>
<td>3.3%</td>
<td>7.6%</td>
<td>14.9%</td>
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<td><strong>10 year optimal</strong></td>
<td>1.2%</td>
<td>3.6%</td>
<td>8.8%</td>
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</table>
Observed Absolute Effect of Assignment to Aspirin Group on Serious Vascular Events or Revascularization and on Major Bleeding, According to Vascular Risk.
Atrial Fibrillation

- American College of Chest Physician (ACCP)
- Use CHA$_2$DS$_2$ to assess stroke risk

**Risk**
- 0 in men; 1 in women no therapy
- > 1 use oral anti-coagulation, not antiplatelet
- Use Direct Oral anticoagulant (DOAC) over dose adjusted warfarin
- Unprovoked Bleeding, bleeding on warfarin, or high risk for bleeding
  - Apixaban, edoxaban, or dabigatran 110mg (where available)
  - If warfarin should be 70% in therapeutic range, target INR 2-3
    - Minimize concomitant ASA, NSAID
AFIB ACCP Update

• Afib >48 hrs therapeutic anticoag X 3 weeks or TEE prior to cardioversion
• Anticoagulate for 4 weeks after cardioversion
• TEE demonstrated Left atrial thrombus
  o 4-12 weeks additional anticoag to allow endothelialization or thrombus resolution
  o +/- repeat TEE

Ray Allen, North Central Heart
AFIB ACCP update

• Stents – assume DES and atrial fib and elective PCI
  o Triple therapy X 3 months, then anticoagulate plus plavix until 12 months then anticoagulation monotherapy
  If High risk HAS-BLED >/= 3, then triple therapy 1 month, Dual X 6 months then anticoagulate
  I personally would continue an antiplatelet agent

  If stenting for ACS
  triple therapy for 6 months, then anticoag + plavix until 12 months
  Afib with intracranial hemorrhage
  left atrial appendage occlusion

Chest 2018; Aug 21 E published ahead of print
HAS-BLED

- Hypertension
- Abnormal organ fx renal___ liver___ age___
- Stroke
- Bleed– prior or predisposition
- Labile INR<60  Time in Therapeutic Range (TTR)
- Ethoh >8 drinks/wk
- Drugs  antiplatelet, NSAIDS
- > 3 points high risk for bleed
CHA$_2$DS$_2$-VASC

- CHF
- Hypertension
- Age 1 point for >65, 2$^{nd}$ Point for >75, 3$^{rd}$ point female
- Diabetes
- Stroke—2 points
- Vascular disease coronary, peripheral
- 9 points possible
- 1 or more oral anticoag—no role for antiplatelet

Ray Allen, North Central Heart
Observed Absolute Effect of Assignment to Aspirin Group on Serious Vascular Events or Revascularization and on Major Bleeding, According to Vascular Risk.
Observed Absolute Effect of Assignment to Aspirin Group on Serious Vascular Events or Revascularization and on Major Bleeding, According to Vascular Risk.
Ray Allen, North Central Heart
Chronic Total Occlusion

The Next Leap
Observed Absolute Effect of Assignment to Aspirin Group on Serious Vascular Events or Revascularization and on Major Bleeding, According to Vascular Risk.

**Estimated 5-Yr Risk of Serious Vascular Event at Baseline**

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<tr>
<th>Event Type</th>
<th>Aspirin</th>
<th>Placebo</th>
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<td>5.7±3.7</td>
<td>11.2±5.4</td>
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<tr>
<td>Serious vascular events or revascularizations avoided</td>
<td>6.1±4.2</td>
<td>13.4±6.3</td>
</tr>
<tr>
<td>Major bleeding caused</td>
<td>2.8±2.6</td>
<td>8.9±3.2</td>
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No. of Events per 5000 Person-Yr in Aspirin Group

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Estimated 5-Yr Risk of Serious Vascular Event at Baseline

- <5% (40.5% of trial population)
- 5% to <10% (42.3% of trial population)
- ≥10% (17.2% of trial population)