Secondary Prevention Therapies for Acute/Chronic Coronary Syndromes Part III

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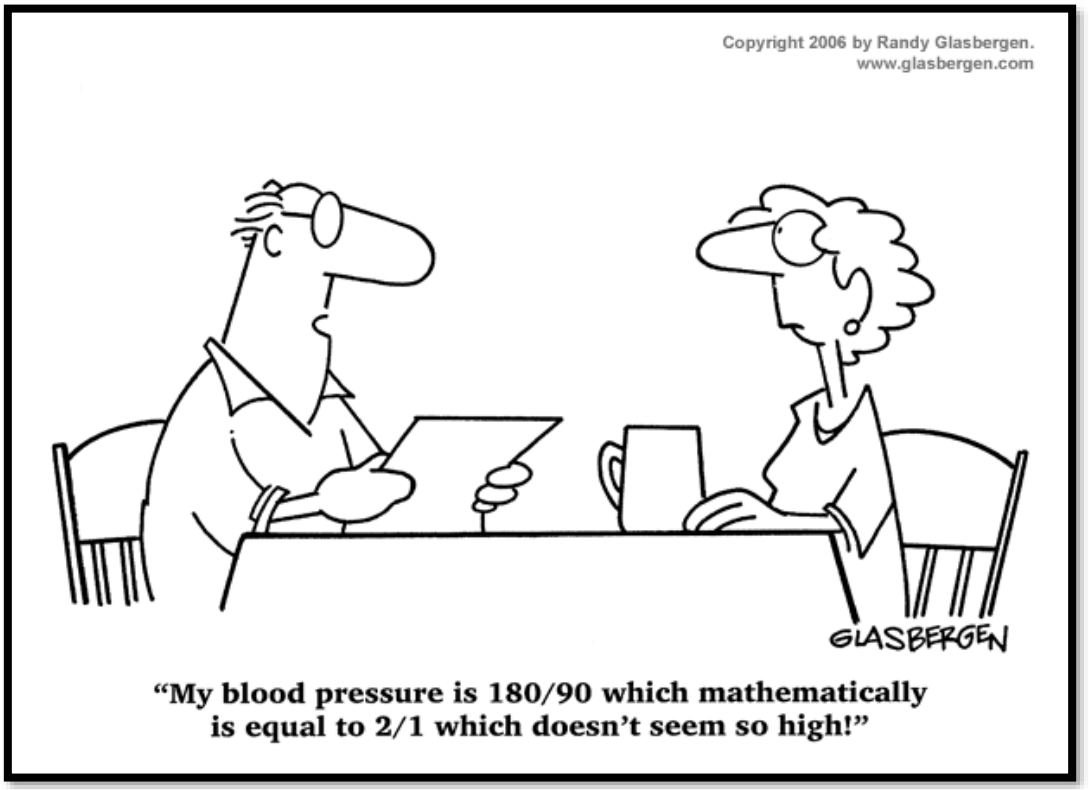
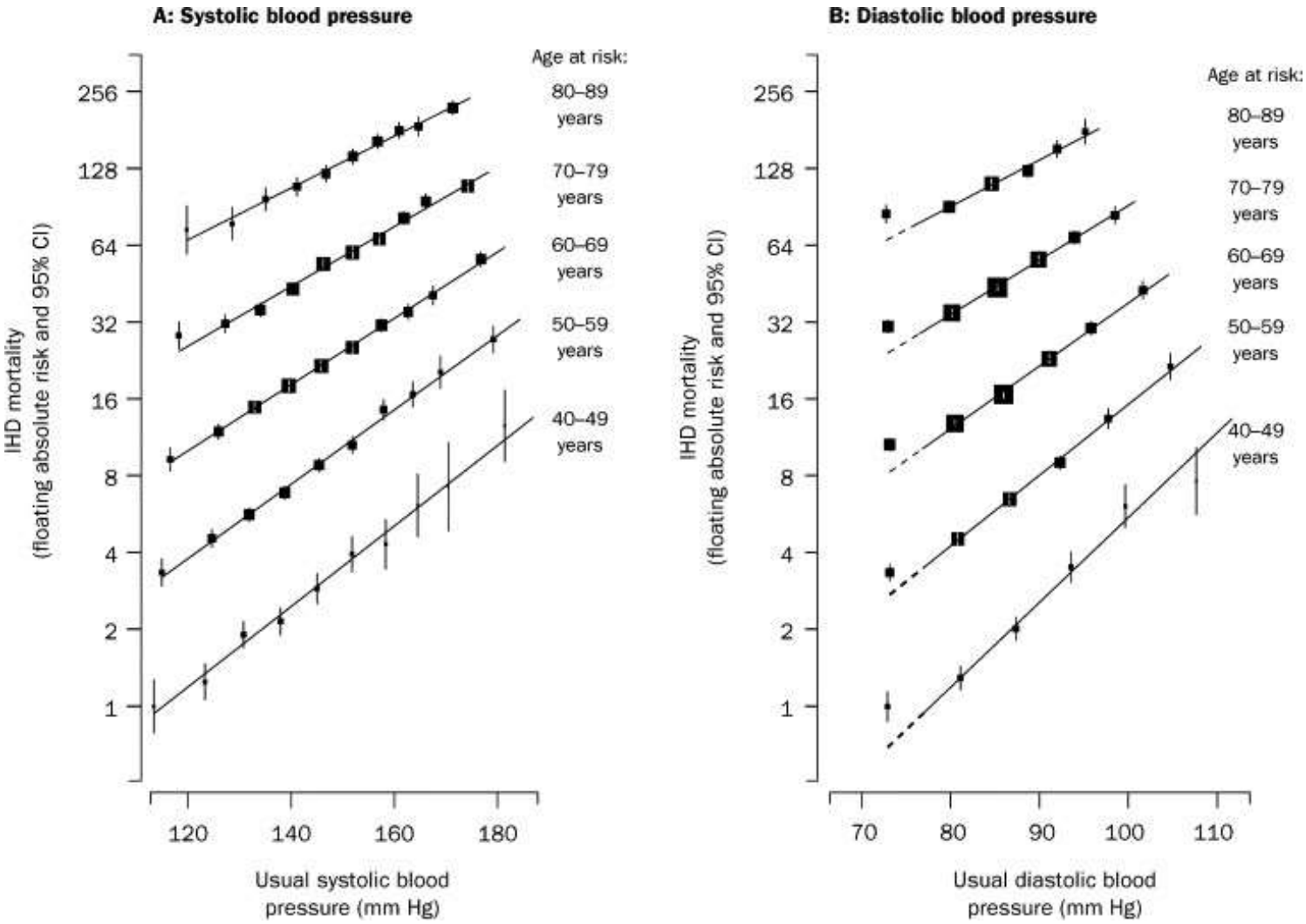
B is for:



- Beta-blockers
- Blood pressure

BP and CHD Mortality



Lewington et al. Lancet 2002;360:1903-1913

B: Blood Pressure

- ACC/AHA recommends:
  - Initiate and/or maintain lifestyle modifications
    - Weight control, increased physical activity, sodium reduction, alcohol moderation, and increased consumption of fruits, vegetables and low-fat dairy products
  - BP >/= 130/80mmHg should be treated with meds, initially with ACEI and BB, with addition of other drugs as needed to achieve goal BP
  - Drug selection should be based on compelling indications (see slide #6)
  - Goal BP = < 130/80 mmHg

ACC/AHA 2011 Secondary Prevention Update; 2012 SIHD guidelines; 2019 ESC Guidelines; 2017 HTN guidelines

HTN Management in SIHD (CCS)

Guideline-Directed Management and Therapy beta blockers for BP control and relief of angina:

Carvedilol
Metoprolol (S/T)
Bisoprolol
Nadolol
Propranolol
Timolol
NOT atenolol

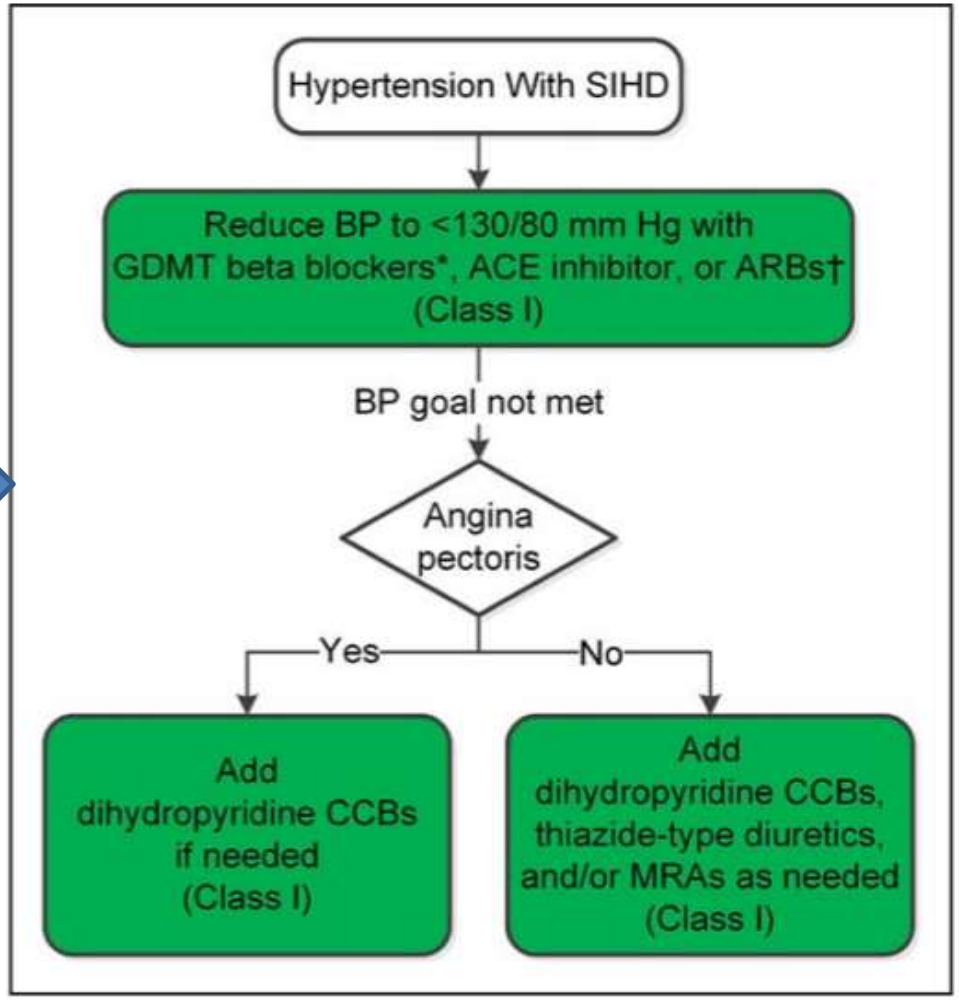


Figure 5. Management of hypertension in patients with SIHD.

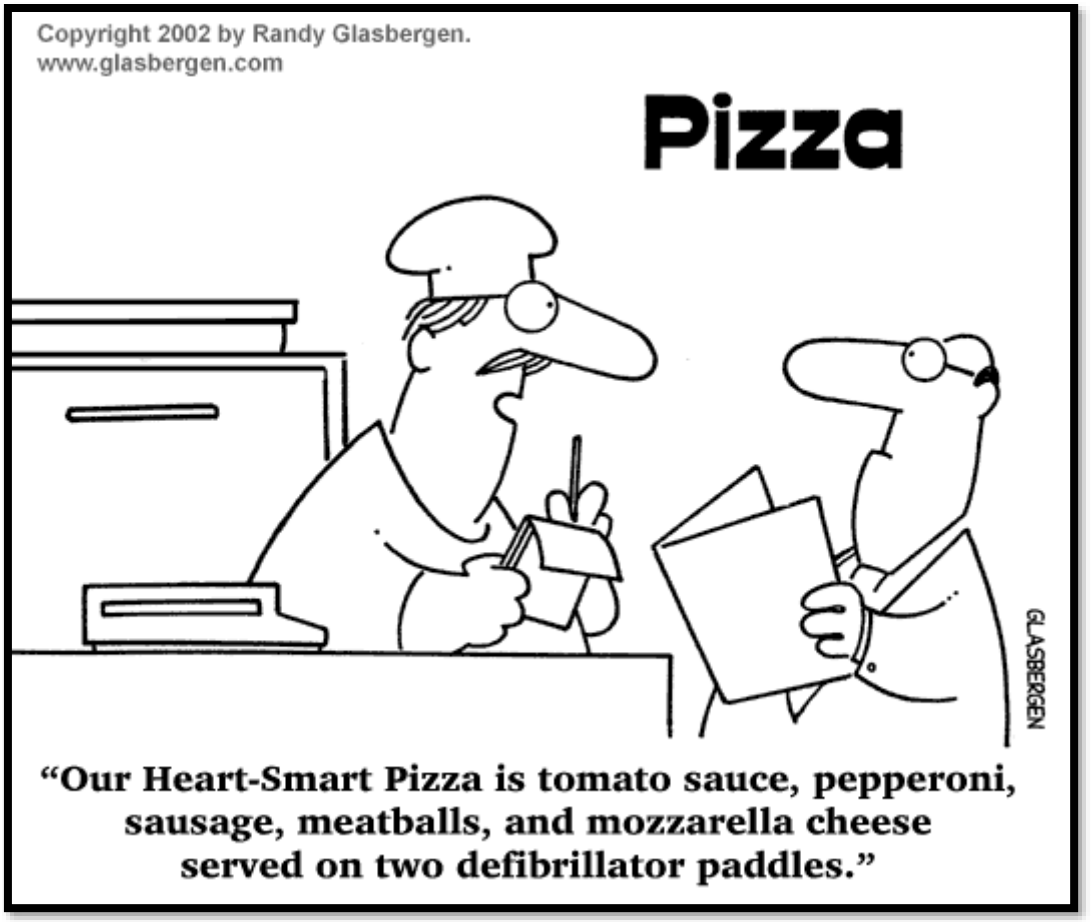
2017 HTN Guidelines

Treatment of HTN in Patients with CHD

Indication	ACE I/ARB	BB	CCB	Diuretic	Aldosterone Antagonist
Angina	**X** Combo with BB	**X** Combo with ACEI	**X** Add DHP to BB		
HFrEF	**X** Combo with BB and AA	**X** Combo with ACEI and AA	Avoid Non-DHP	**Loop**	**X** Combo with BB and ACEI
DM	**X** Combo w/CCB or thiazide	May use vasodilating BB	**X** Combo w/ACEI	**X** Combo w/ ACEI	

2017 HTN guidelines; 2019 ESC Guidelines; 2020 Management of CAD in T2DM

C is for:



- **Cholesterol**
- Cigarettes

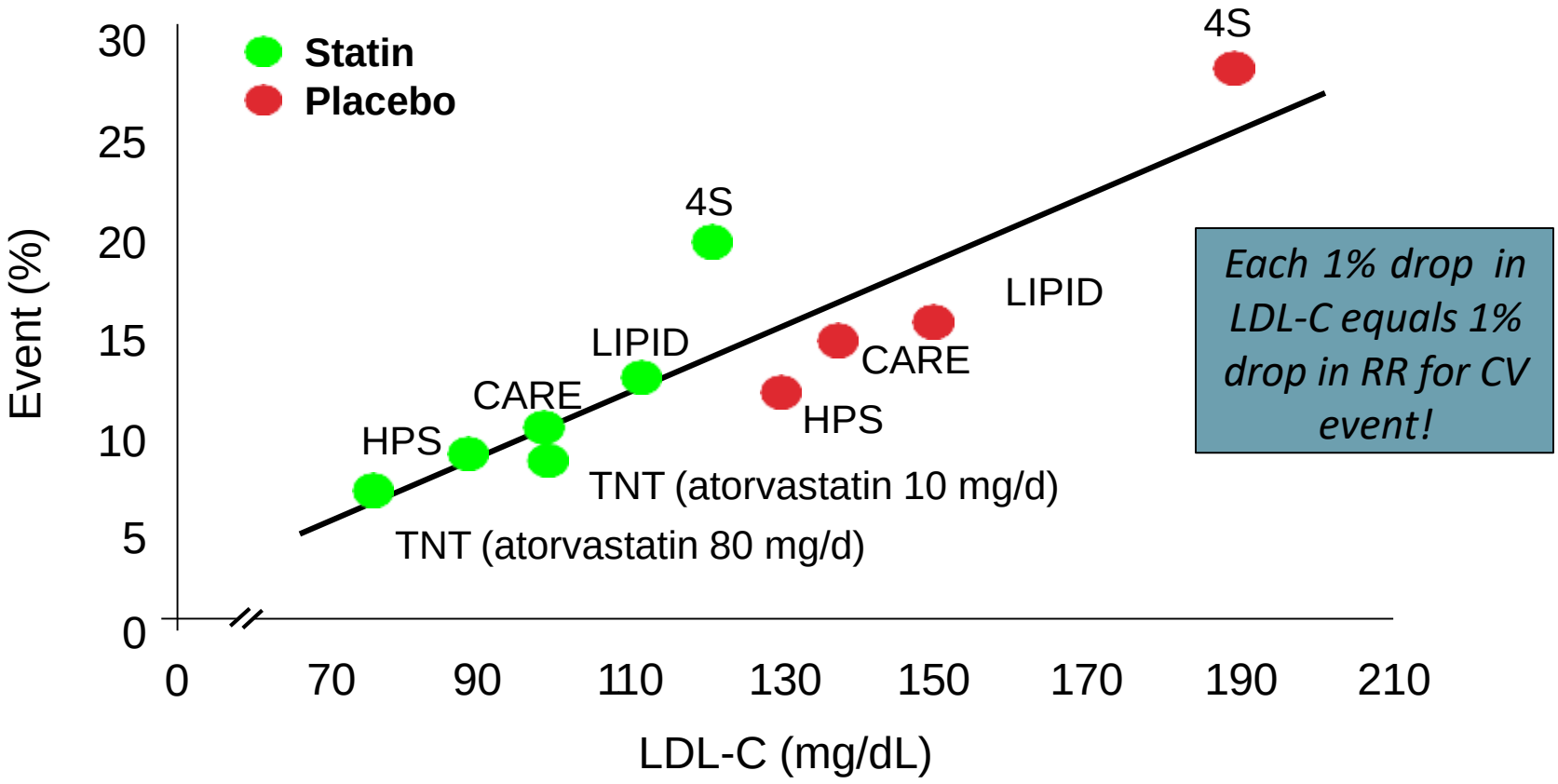
C: Cholesterol

- ACC/AHA recommends:
  - Lifestyle modifications (including daily physical activity and weight management) are strongly encouraged in all patients with SIHD (CCS).
  - Dietary therapy should include reduced intake of saturated fats, trans fatty acids, and cholesterol.
  - Statin therapy should be prescribed in absence of contraindications or documented adverse effects.
    - If patient does not tolerate a statin, LDL cholesterol lowering therapy with bile acid sequestrant (BAS), ezetimibe, or PCSK-9 inhibitors recommended.
    - Recommend high potency statin at moderate to high doses.
    - *No clear evidence that treating to a particular LDL target as opposed to treating with a higher dose of a higher-potency statin is beneficial*

ACC/AHA 2012 SIHD guidelines; 2016 ACC Expert Consensus on Role of Non-Statin Therapies for LDL-C Lowering in the Management of ASCVD Risk; 2018 Cholesterol Guidelines

Statins and Secondary Prevention

Relationship between LDL Levels and Event Rates in Secondary Prevention Trials of Patients with Stable CHD

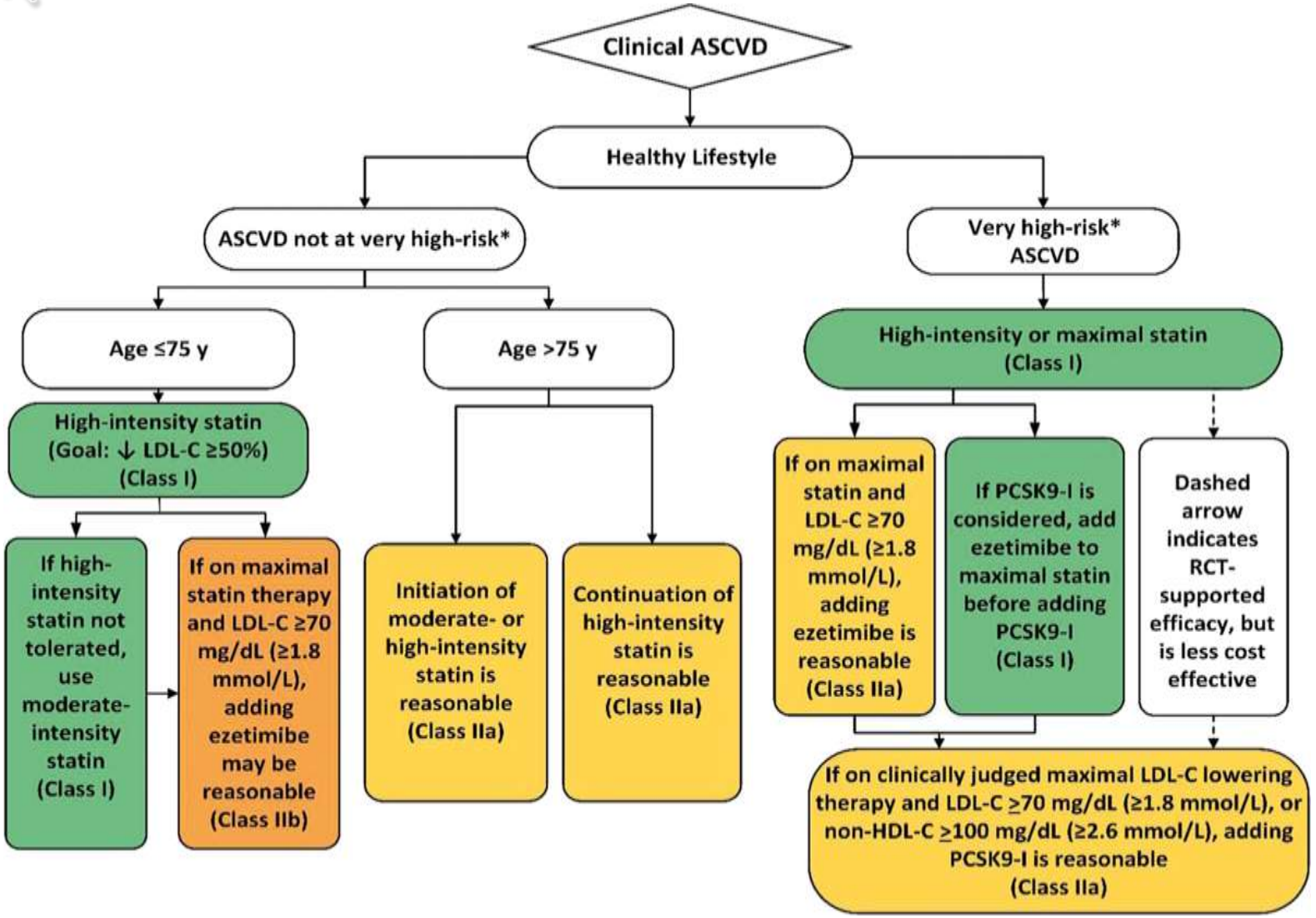


2018 ACC/AHA Cholesterol Guidelines

- Clinical ASCVD (ACS, H/O MI, stable or unstable angina, coronary or other arterial revascularization, stroke, TIA, or PAD)
  - Age ≤75 years: **High-intensity statin or maximally tolerated statin**
  - Age > 75 years OR if not candidate for high-intensity statin: **Moderate-intensity statin or continue high-intensity statin if already on and tolerating**
  - Adding ezetimibe to statin when LDL remains >/= 70 md/dL is reasonable in patients with h/o multiple CVD events or 1 CVD event and multiple RF
  - Adding PCSK-9 inhibitor to statin/ezetimibe when LDL remains >/= 70 mg/dL is reasonable

Grundy et al. Circ 2019;139:e1082-1143

Secondary prevention in patients with clinical ASCVD



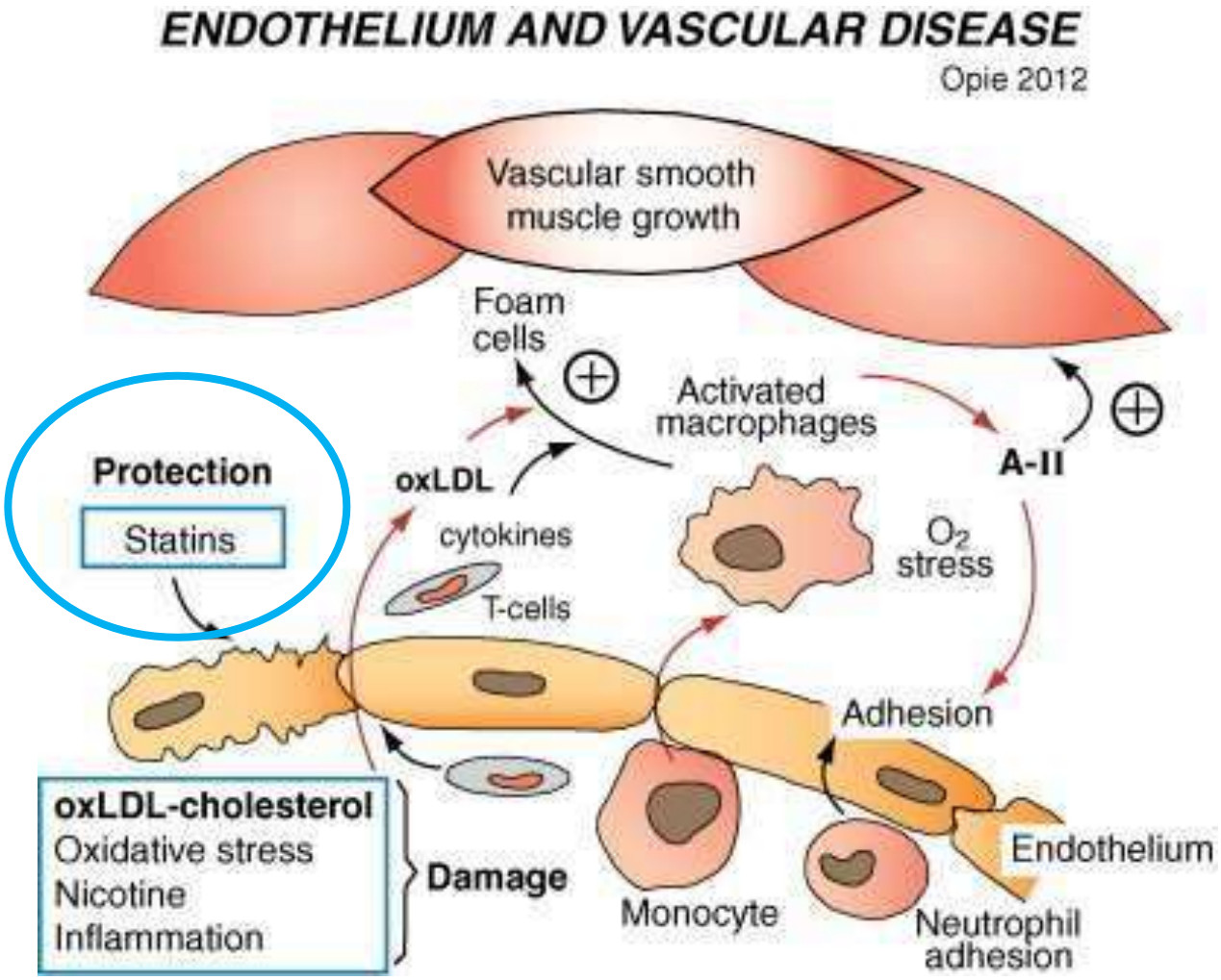
Statin Dosing

Table 3. High-, Moderate-, and Low-Intensity Statin Therapy*

	High Intensity	Moderate Intensity	Low Intensity
LDL-C lowering†	≥50%	30%–49%	<30%
Statins	**Atorvastatin (40 mg‡) 80 mg** **Rosuvastatin 20 mg (40 mg)**	**Atorvastatin 10 mg** (20 mg) **Rosuvastatin** (5 mg) **10 mg** **Simvastatin 20–40 mg§**	Simvastatin 10 mg
	…	**Pravastatin 40 mg** (80 mg) **Lovastatin 40 mg** (80 mg) Fluvastatin XL 80 mg **Fluvastatin 40 mg BID** Pitavastatin 1–4 mg	**Pravastatin 10–20 mg** **Lovastatin 20 mg** Fluvastatin 20–40 mg

Drugs and doses in bold were evaluated in RCTs and demonstrated reduction in ASCVD events.

Pleiotropic Effects of Statins



Adapted from Drugs for the Heart 8th Edition, Figure 10-1.

Statins: Clinical Benefits

- Statins modify endothelial function, lower lipid levels, stabilize plaques, induce regression of lesion, and reduce inflammation and thrombus formation
  - ASTEROID- rosuvastatin 40 mg/day decreased LDL to 60.8 (baseline 130) and increased HDL by 15% and demonstrated regression of atherosclerosis
  - Statins decrease CRP levels independent of LDL cholesterol lowering
  - CHD patients with lowered LDL and CRP levels have slower rates of restenosis (REVERSAL)

AJHP 2004;61:1676-1681; NEJM 2005;352:20-28; NEJM 2005;352:29-38

Microvascular Disease

- Statins are important to lower LDL-cholesterol and decrease risk of ASCVD events.
- Improvement of anginal symptoms has been reported with statins and ACE inhibitors due to their pleiotropic effects.
  - Studies have demonstrated that patients with MVD receiving statins show significant improvement in exercise-induced ischemia.

2013 ESC Stable CAD guidelines; Ong et al. Eur Heart J 2015;1:65-71.; HF Clin 2016;12:141-156

Statins: Key Points

- Educate about side effects!
- Encourage diet and exercise to reach LDL goals
- Atorva- and rosuvastatin can be taken at any time of day
- Report muscle pain/weakness
- Grapefruit is heart healthy- avoid frequent consumption
- Take with food to avoid stomach upset.

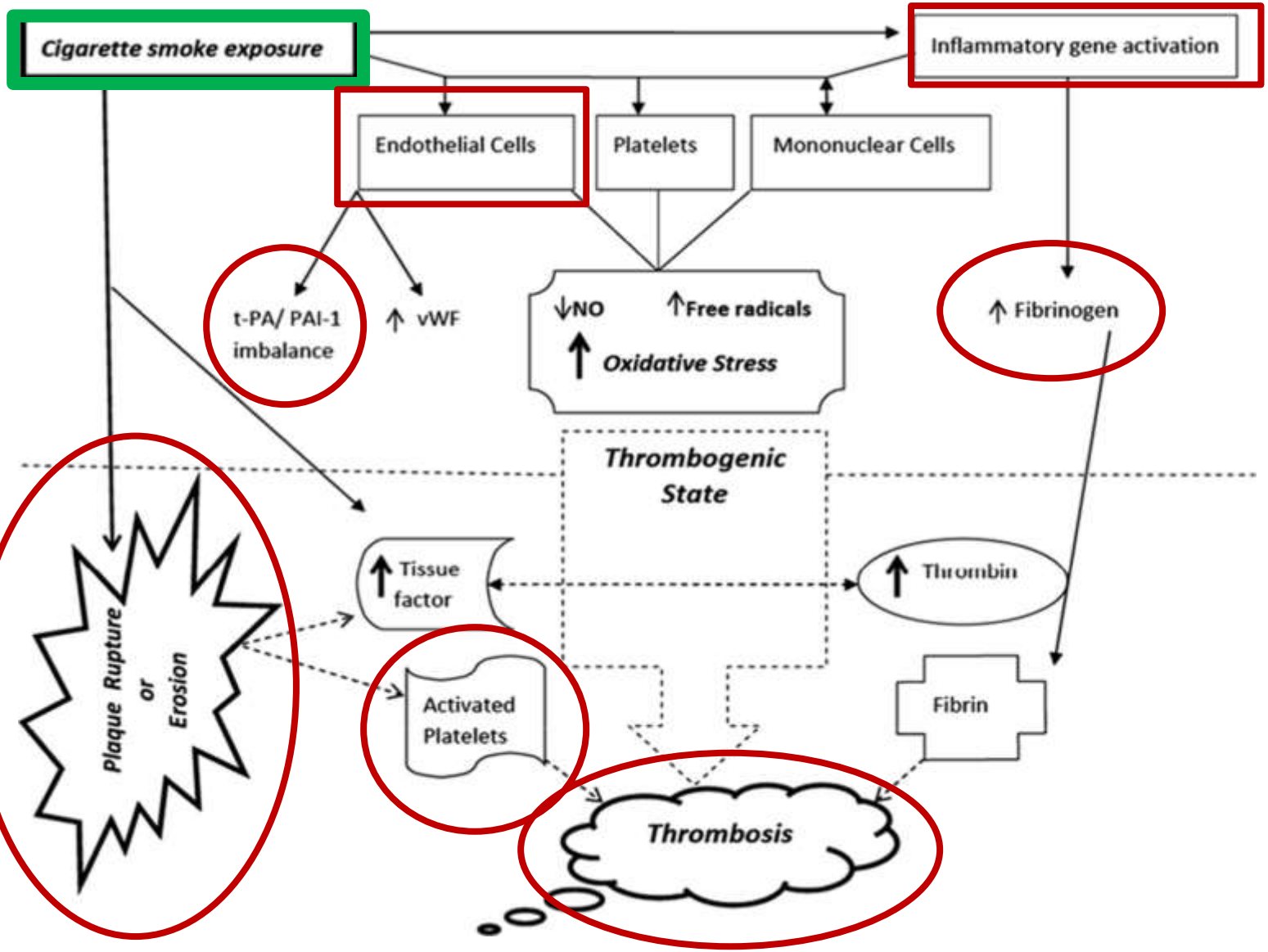
C is for:

- Cholesterol
- **Cigarettes**

Facts: Smoking and CVD

- 10-30% of all CVD deaths are attributable to smoking.
- Smoking adversely affects all phases of athero-thrombotic disease process, culminating in acute CV events.
  - endothelial dysfunction
  - plaque development and destabilization
  - imbalances of antithrombotic and prothrombotic factors

ACC/AHA 2012 SIHD guidelines; 2019 ESC Guidelines; 2018 ACC Expert Consensus Decision Pathway for Tobacco Cessation Treatment



Rajat S. Barua. Arteriosclerosis, Thrombosis, and Vascular Biology. Mechanisms of Coronary Thrombosis in Cigarette Smoke Exposure, Volume: 33, Issue: 7, Pages: 1460-1467, DOI: (10.1161/ATVBAHA.112.300154)

Facts: Smoking and CVD

- Smoking increases the risk of CHD (MI and sudden cardiac death), cerebrovascular disease, PAD, and abdominal aortic aneurysm.
- Smoking also associated with increased risk of HF, and atrial/ventricular arrhythmias.
- Continued smoking after revascularization (PCI, CABG) is associated with adverse clinical outcomes, particularly stent thrombosis.

ACC/AHA 2012 SIHD guidelines; 2019 ESC Guidelines; 2018 ACC Expert Consensus Decision Pathway for Tobacco Cessation Treatment

Facts: Smoking Cessation Benefits

- Smoking cessation reduces risk for subsequent CV events and mortality.
- All smokers benefit from smoking cessation, even if cessation occurs after the development of clinical CVD. Regardless of:
  - duration
  - intensity of smoking
  - comorbidities
  - age

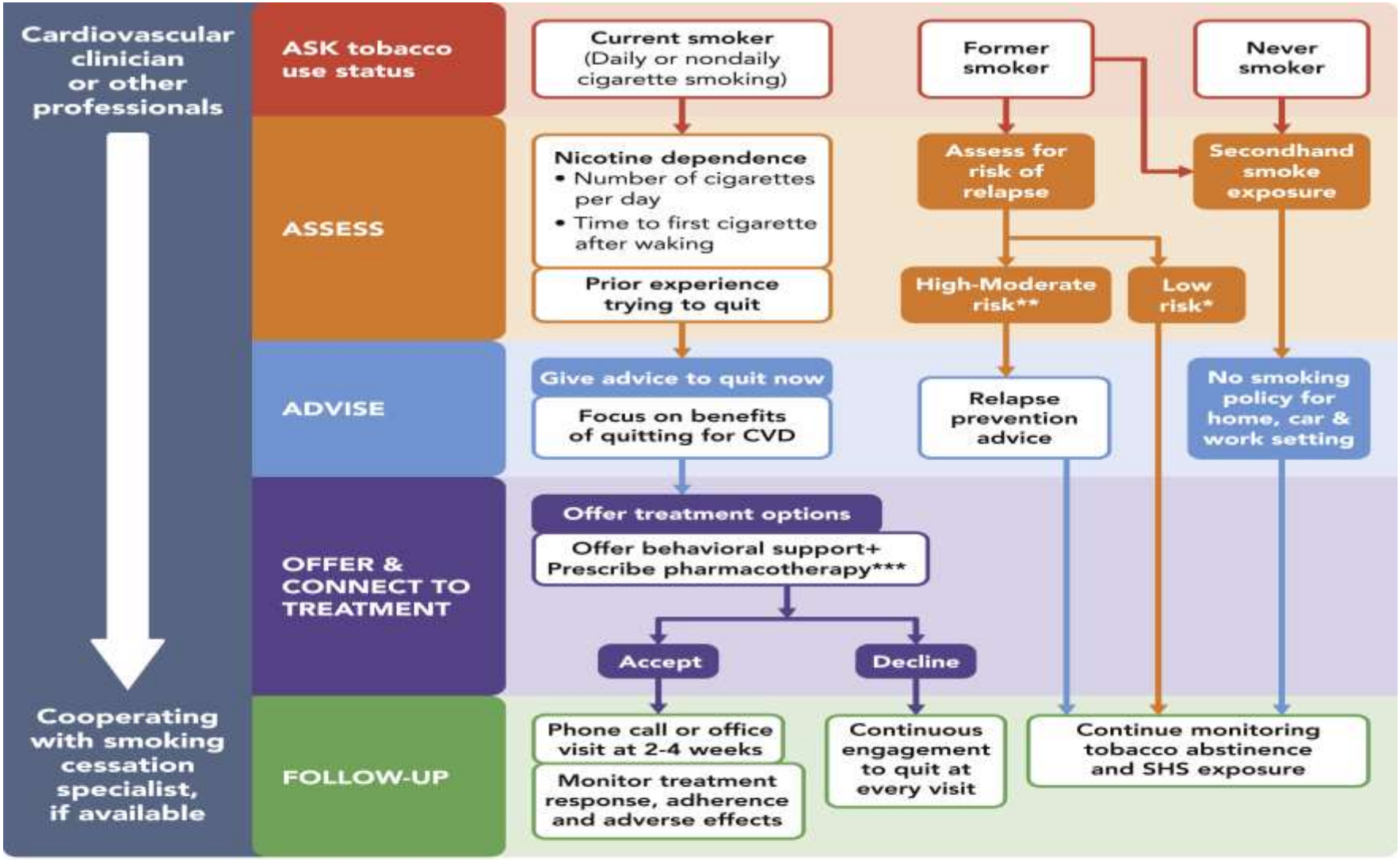
2018 ACC Expert Consensus Decision Pathway for Tobacco Cessation Treatment

C: Cigarettes

- ACC/AHA recommends:
  - Assess for tobacco use at every healthcare visit
  - All adults who use tobacco should be firmly advised to quit
  - Combination of behavioral interventions plus pharmacotherapy is recommended to maximize quit rates
  - Avoidance of secondhand smoke exposure recommended

ACC/AHA 2012 SIHD guidelines; 2019 ESC Guidelines; 2019 Primary Prevention Guidelines

2018 ACC Expert Consensus Decision Pathway for Tobacco Cessation Treatment



ABBREVIATIONS:
CVD = cardiovascular disease
SHS = secondhand smoke

*	More than 1 year since last cigarette
**	Refer to Figures 2 and 3
***	If not contraindicated
†	Refer to Tables 1 and 2

NRT and Safety Concerns

- NRT should not be withheld in patient with CHD due to concerns regarding nicotine's effect on the heart!
  - NRT have been used for years in this patient population
  - Millions of patients with CHD have used NRT
  - NRT is delivered through the venous system, not the arterial system, as patient not smoking tobacco
  - NRT delivers nicotine slowing and produces lower blood concentrations compared to smoking
  - NRT does not contain other toxins like carbon monoxide

TABLE 4 Recommended Pharmacotherapy for Smoking Cessation in Patients with CVD

	Outpatient With Stable CVD	Inpatient With ACS
1st line	Varenicline OR combination NRT*	*In-hospital to relieve nicotine withdrawal:* Nicotine patch OR combination NRT* *At discharge:* Combination NRT or varenicline†
2nd line	Bupropion OR single NRT product	*At discharge:* Single NRT product
3rd line	Nortriptyline‡	Bupropion§
If single agent is insufficient to achieve abstinence	Combine categories of FDA-approved drugs: Varenicline + NRT (single agent) Varenicline + bupropion Bupropion + NRT (single agent)	n/a

*Combination NRT comprises a nicotine patch plus the patient's choice of nicotine gum or lozenge or inhaler or spray.

2018 ACC Expert Consensus Decision Pathway for Tobacco Cessation Treatment

D is for:

- **Diet**
- **Diabetes**
- **Depression**

"Do you want that with or without angioplasty?"

D: Diet

- ACC/AHA recommends:
  - Calculate BMI and measure waist circumference at every visit
  - Encourage weight management through physical activity and caloric intake
  - Desired BMI 18.5-24.9 kg/m^2
  - Desired waist circumference <40 inches for men and < 35 inches in women
  - Initial weight loss goal is 5-10% from baseline, continue further weight loss after initial success

ACC/AHA 2007 CSA Focused Update; 2011 Secondary Prevention Update; 2012 SIHD guidelines; 2019 Primary Prevention Guidelines

D: Diet

Consume a diet that emphasizes intake of:

- Vegetables (emphasis on root and green)
- Fruits (particularly fresh)
- Whole grains (cereals, breads, rice or pasta)
- Low-fat dairy products
- Poultry
- Fish (rich in omega-3 FA)
- Legumes
- Nontropical vegetable oils (olive or canola)
- Nuts (walnuts, almonds, hazelnuts, peanuts);
- Limit intake of sweets, sugar-sweetened beverages and red meats.

2013 ACC/AHA Lifestyle Management Guidelines; 2019 Primary Prevention Guidelines

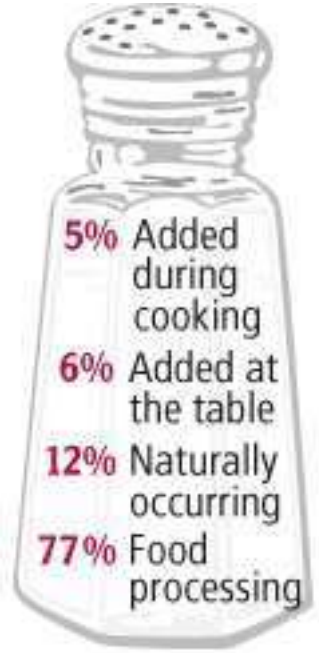
D: Example Diets

- Mediterranean
- DASH
- USDA Food Pattern
- AHA Diet
- Average Results:
  - Lower BP by 5-6/3 mmHg
  - Lower LDL-C by 11 mg/dL

Efficacy of the DASH Diet: reduced SBP by 7.1 mmHg in adults without HTN and 11.5 mmHg in adults with HTN!

D: Sodium Intake in Diet

- Lower sodium intake:
  - Consume no more than **2400 mg** Na+/day
  - Further decrease to **1500mg/day** if desirable to further reduce BP
  - Reduce intake by ~ **1000mg**/day to lower BP, even if desired daily sodium intake not yet achieved
  - **Combine DASH dietary pattern with lower sodium intake**



2019 Primary Prevention Guidelines

Good Substitutes vs Bad

Good!

Bad!

Bad!

Thank you!