Secondary Prevention Therapies for Acute/Chronic Coronary Syndromes

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Objectives

- Utilize the ACC/AHA/ESC guidelines to select appropriate medication therapies for individual patients with CHD (CCS and ACS).
- Define the rationale and treatment goals for each drug category used for secondary prevention of CHD.
- Compare the mechanism of action for the anti-anginal medications and determine which agent would be preferred in various patient situations.

Objectives Continued

- Describe the role of non-pharmacologic therapies in the management of CHD.
- Identify treatments that have little therapeutic benefit for treatment and secondary prevention of CHD.
- Demonstrate the important role pharmacists have in the management of heart disease and patient education.

Recommended Resources

- ACC/AHA 2002 Guideline Update for the Management of Patients with Chronic Stable Angina
  - Available at ACC.org
- ACC/AHA 2007 Chronic Stable Angina Focused Update
  - Available at ACC.org
- AHA/ACCF 2011 Secondary Prevention Guidelines
  - Available at ACC.org or Americanheart.org
- AHA/ACCF 2012 Stable Ischemic Heart Disease Guidelines and 2013 Update
  - Available at ACC.org
- ESC 2019 Guidelines for the Diagnosis and Management of Chronic Coronary Syndromes

CHD Secondary Prevention Treatments

American Heart Association. Learn and Live.

A: Anti-platelets, Anti-anginals, ACE Inhibitors (RAAS blockers)

B: Beta blockers, blood pressure

C: Cholesterol, cigarettes

D: Diet (weight management), diabetes, depression

E: Exercise, education

F: inFLUenza vaccination, ? fish oil

ACC/AHA 2002 CSA Guidelines; 2007 CSA Focused Update; 2011 Secondary Prevention Update; 2012 SIHD Guidelines; 2013 Secondary Prevention in Older Adults; 2019 ESC Management of CCS

Goals in CCS

Overall Treatment Goals

- Prevent disease progression- "live longer"
- Improve patient's health status- "feel better"

> *"Genetics loads the gun, but environment pulls the trigger."*
>
> *Elliott Joslin*

Drug Therapy Goals

- Decrease symptoms
  1. Decrease workload: anti-anginal agents
  2. Increase oxygen delivery: anti-anginal agents and revascularization
- Decrease risk for ASCVD events
  - BB, ASA, statins, ACEI
- Prolong survival
  - BB, ASA, statins, ACEI, tobacco cessation
- Improve quality of life

Invasive vs Drug Treatment

- COURAGE (Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation)
  - Compared maximizing drug therapy with revascularization in 2,287 patients with significant CHD (followed for a median of 4.6 years)
  - **Optimal drug therapy was equivalent to PCI in treating asymptomatic SIHD patients**
    - Aspirin or clopidogrel; long-acting metoprolol, amlodipine, ISMN (alone or in combo); lisinopril or losartan; simvastatin, long-acting niacin, or fibrate (alone or in combo)

NEJM 2007;356:1503-1516

Medications

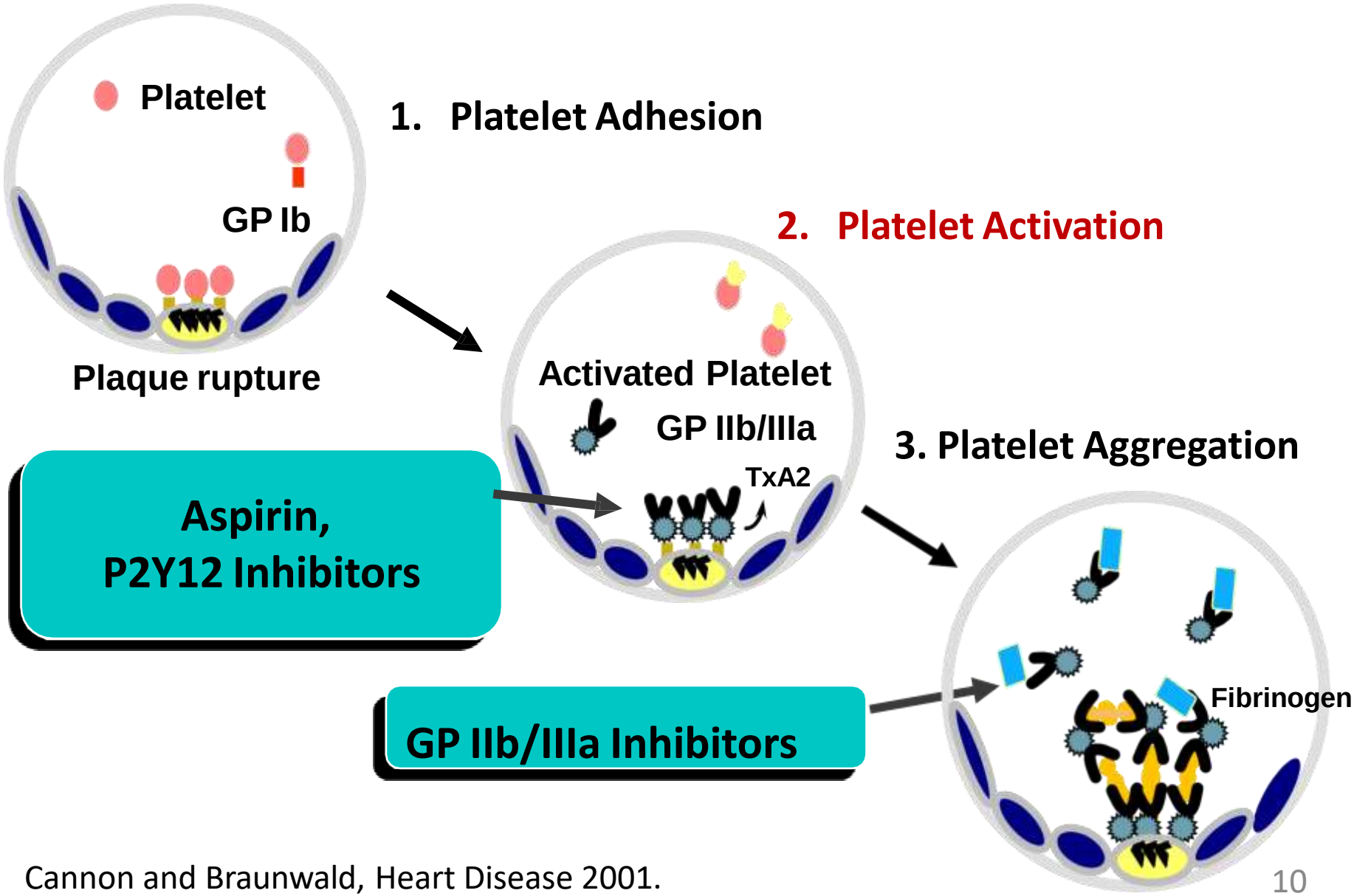
- **Will address indication for each drug class used for secondary prevention of CHD (CCS and ACS) using ACC/AHA guidelines**

- Will not cover side effects or contraindications for drug classes already covered in previous lectures
  - Anti-hypertensive meds
  - Cholesterol lowering meds
  - Anti-platelet meds
  - Tobacco cessation meds

A is for:

- Anti-platelet agents
- Anti-anginals
- ACE inhibitors (RAAS blockers)

Platelet Role in Thrombosis



Cannon and Braunwald, Heart Disease 2001.

A: Anti-Platelet Agents

American Heart Association. Learn and Live.

- ACC/AHA recommends: *All Class I Recommendations*
  - Aspirin 75-162mg daily recommended in all patients unless contraindicated
  - Clopidogrel 75mg daily recommended when aspirin contraindicated (allergy)
  - Combine P2Y12 receptor antagonist with aspirin (DAPT) in patients after ACS or PCI

- Treatment goal:
  - Decrease risk of acute CV events (MI, stroke, sudden cardiac death)

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

Pseudoresistance with Enteric Coated Aspirin?

- Enteric coated aspirin has been recommended over plain aspirin to minimize risk of stomach upset
- Known since 2004 that enteric coating may decrease aspirin's absorption and reduce total dose received
- Recent studies demonstrate delayed and reduced absorption of aspirin due to enteric coating
- **Recommendation:**

Grosser et al. Circulation 2013;127:377-85

Antiplatelet: Key Points

- Stress importance!
- Always take with food
- Avoid taking at bedtime
- Use chewable form, not EC
- Bruises and bleeding from cuts common
- Avoid taking extra aspirin and NSAIDs
  - Take daily aspirin 2 hours prior to first dose of ibuprofen or naproxen

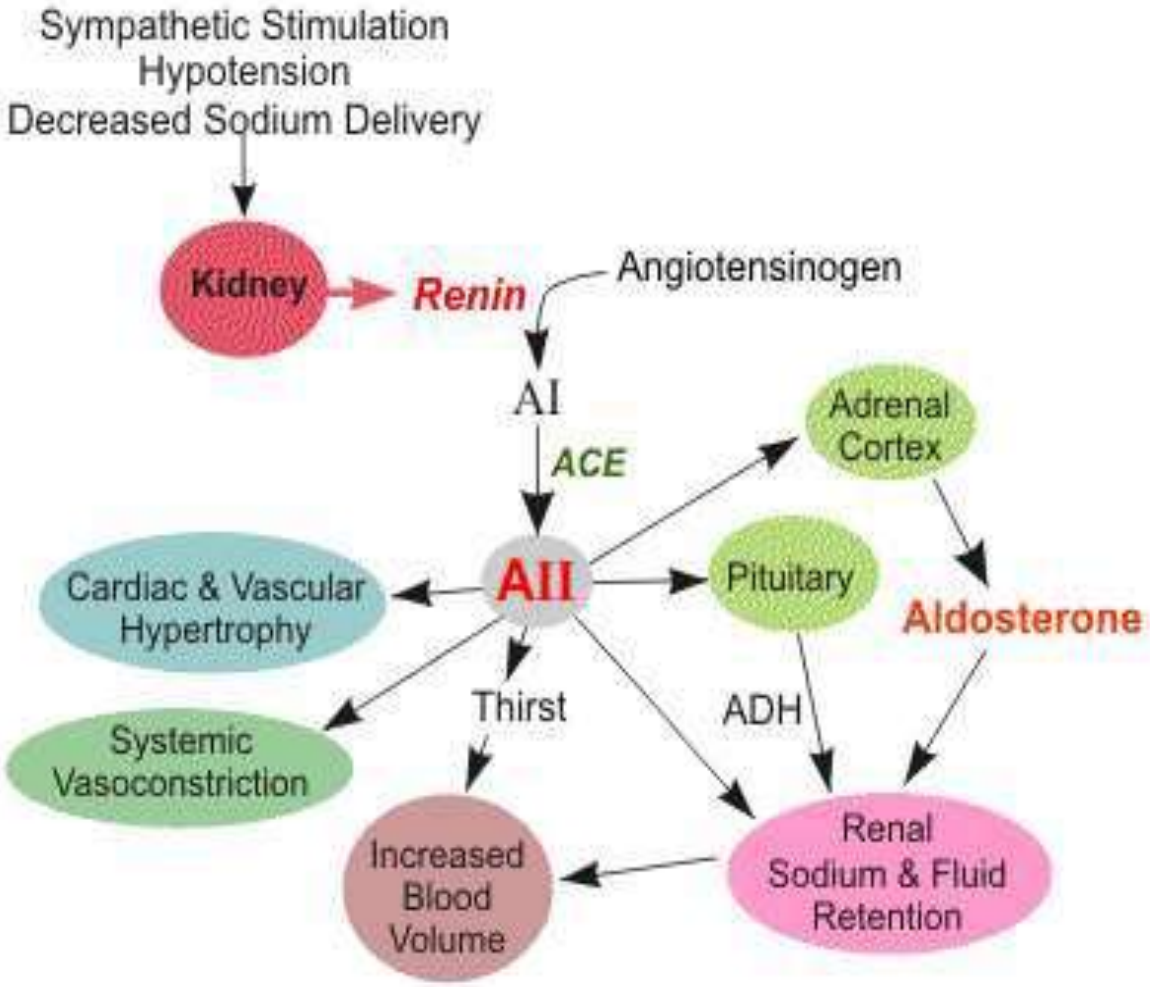
Why avoid NSAIDs? Let me list the whys!

A is for:

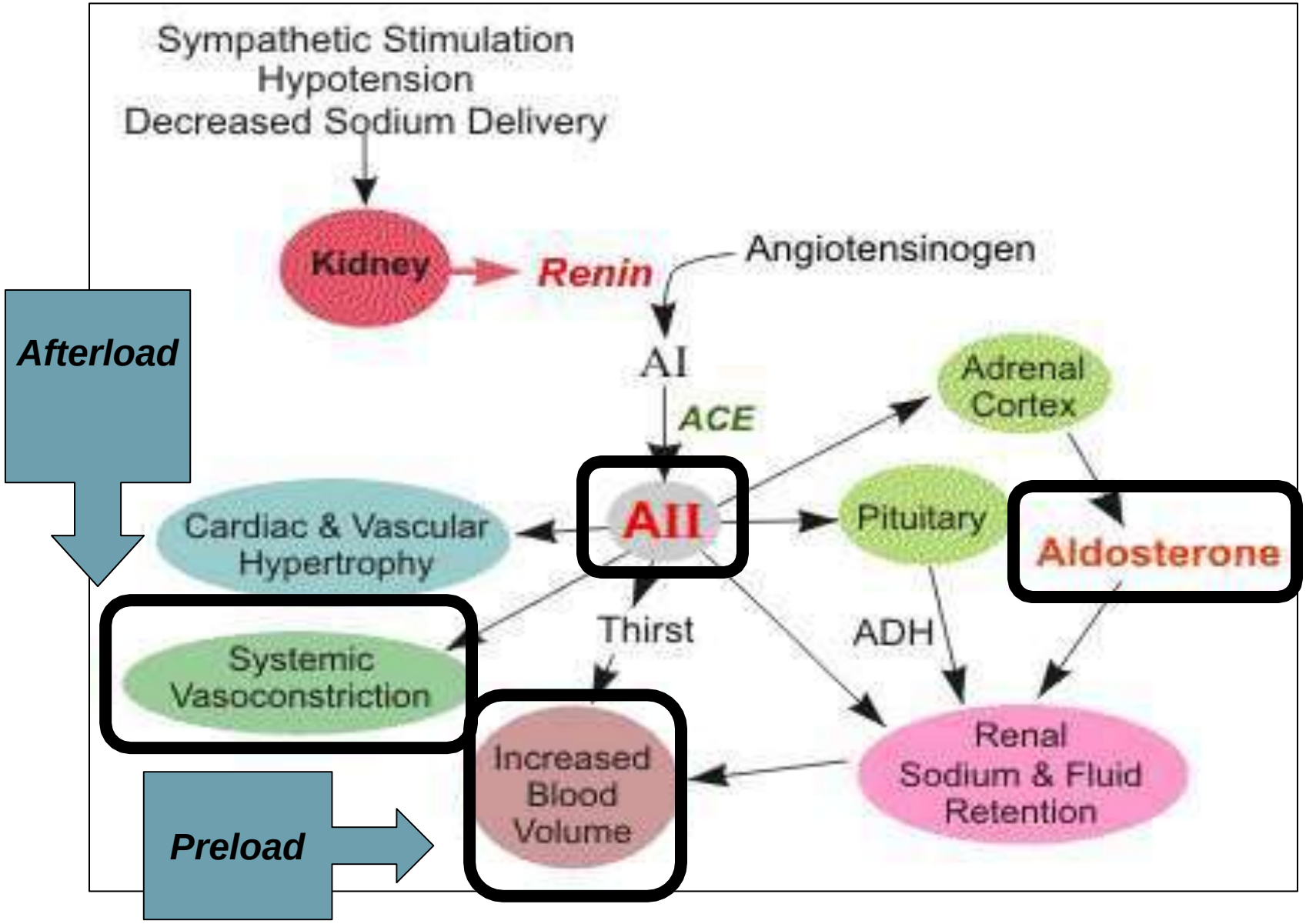
- Anti-platelet agents
- Anti-anginals
- ACE inhibitors (RAAS blockers)

A: RAAS Blockers

- ACE inhibitors
- ARBs
- Aldosterone antagonists
- Direct renin inhibitor



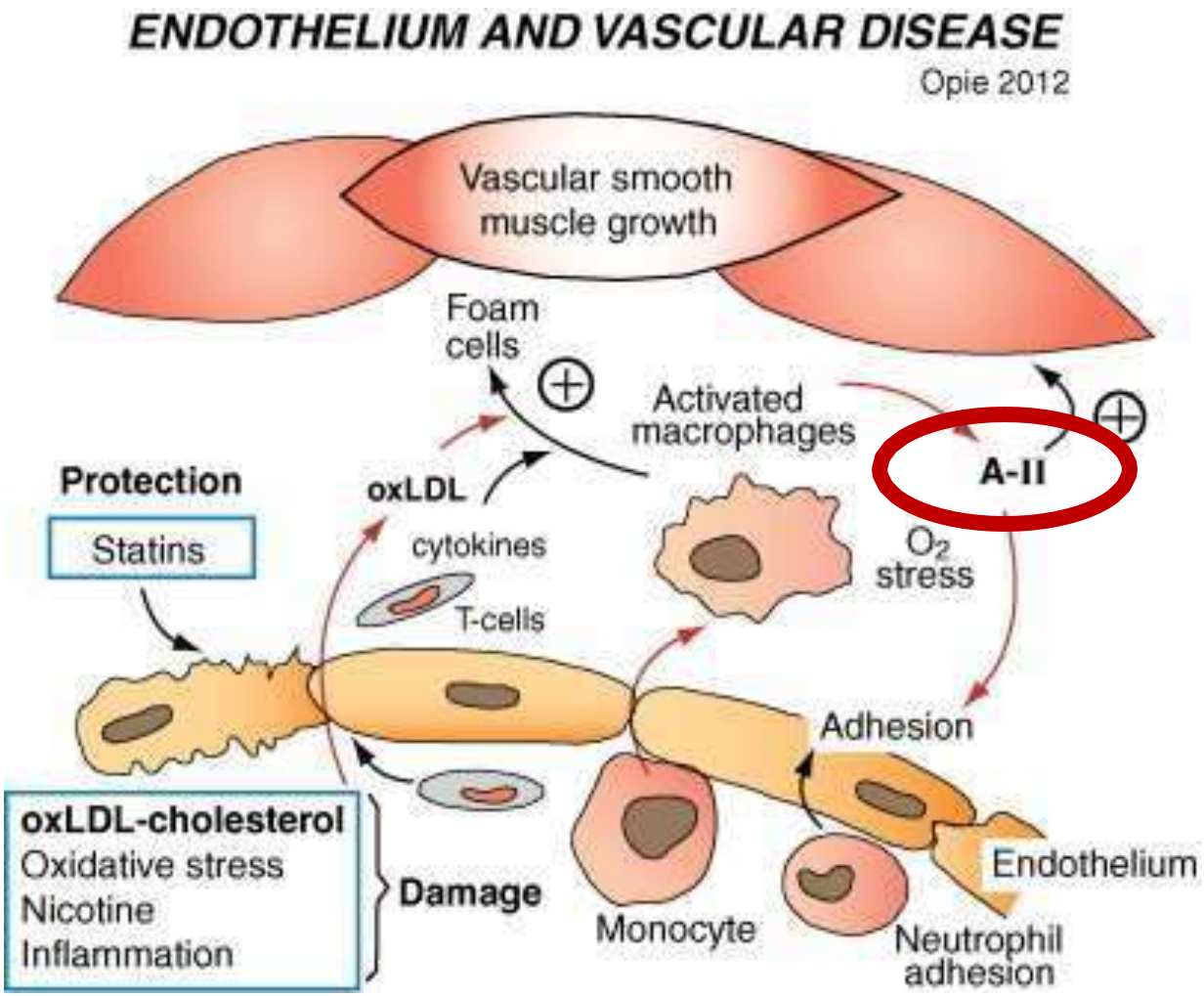
Negative CV Effects of RAAS



Angiotensin II

Tunica Media

Tunica Intima



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

A: ACE Inhibitors

- ACC/AHA recommends:
  - ACE Inhibitors should be started and continued indefinitely in all patients with CHD who have one of the following conditions (unless contraindicated):
    - EF </= 40%
    - HTN
    - DM
    - CKD
  - Reasonable to use ACE I in all other patients with both CHD and other vascular disease

ACC/AHA 2007 CSA Focused Update; 2011 Secondary Prevention Update; 2012 SIHD guidelines, ESC 2019

Clinical Benefits of ACEI

- Local inhibition of ATII (in vasc endothelium) by ACEI protects the vessel wall from endothelial dysfunction associated with atherosclerosis
  - Promotes vasodilation, anti-aggregation of platelets, anti-proliferation of smooth muscle, and anti-thrombotic effects
- Cardiac
  - Decrease myocardial oxygen demand by reducing afterload and preload, preserve left ventricular function, decrease incidence of CV events
- Kidney
  - Renal protective in the setting of DM

A: ACE Inhibitors

- ACC/AHA also recommends:
  - ARBs:
    - May be used in patients who are ACEI intolerant
  - Aldosterone blocker – not recommended for CCS (will discuss in ACS lecture)

ACC/AHA 2007 CSA Focused Update; 2011 Secondary Prevention Update; 2012 SIHD guidelines, ESC 2019

ACE Inhibitors in Microvascular Disease

Table 29 Treatment in patients with microvascular angina

Recommendations	Class[a]	Level[b]	Ref.[c]
It is recommended that all patients receive secondary prevention medications including aspirin and statins.	I	B	371
β-blockers are recommended as a first line treatment.	I	B	372
Calcium antagonists are recommended if β-blockers do not achieve sufficient symptomatic benefit or are not tolerated.	I	B	367
ACE inhibitors or nicorandil may be considered in patients with refractory symptoms.	IIb	B	368
Xanthine derivatives or non-pharmacological treatments such as neurostimulatory techniques may be considered in patients with symptoms refractory to the above listed drugs.	IIb	B	373–375

ACE = angiotensin converting enzyme.
[a] Class of recommendation.
[b] Level of evidence.
[c] Reference(s) supporting levels of evidence.

- In patients with persistent symptoms despite optimal anti-anginal therapy, ACE inhibitors may improve microvascular function by inhibiting AT II vasoconstriction.

2013 ESC SCAD Guidelines

ACEIs : Key Points

- Educate about side effects!
- Monitor BP at home
- Use caution when getting up quickly
- Avoid NSAIDs
- Do not use salt substitutes that contain potassium chloride
- Keep lab appointments
- Monitor potassium levels closely when also taking an aldosterone antagonist!

Thank-you!