

Secondhand Smoke

&

The Heart



The Effects of Secondhand Smoke on the Heart

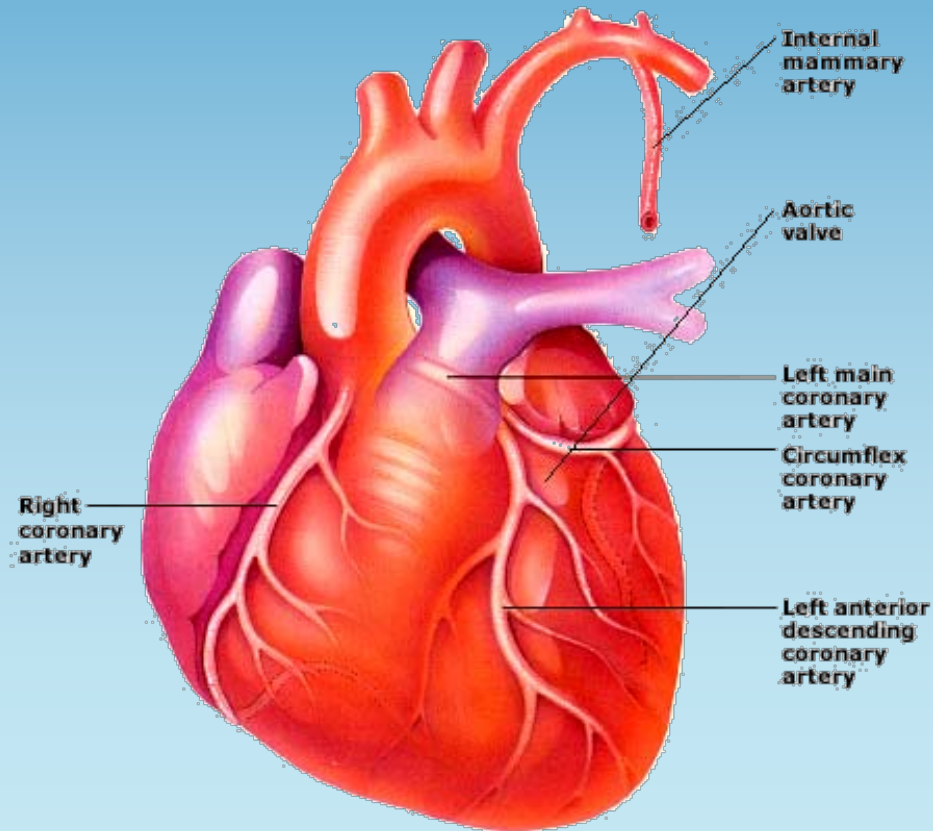
- Objectives

- Understand the normal operation of the heart and blood vessels, and what a Heart Attack is
- Understand how secondhand smoke impacts the heart and blood vessels
- Understand how secondhand smoke increases the occurrence of heart attacks
- Understand other health effects of secondhand smoke including cholesterol



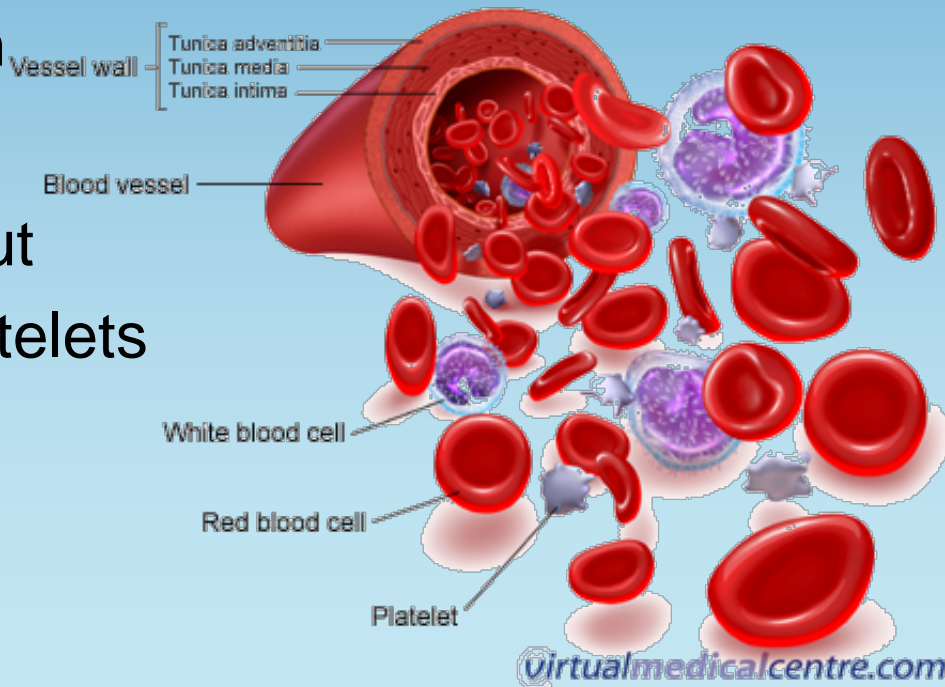
A Normal Heart

- The role of the heart is to pump oxygen-rich blood to every living cell in the body.

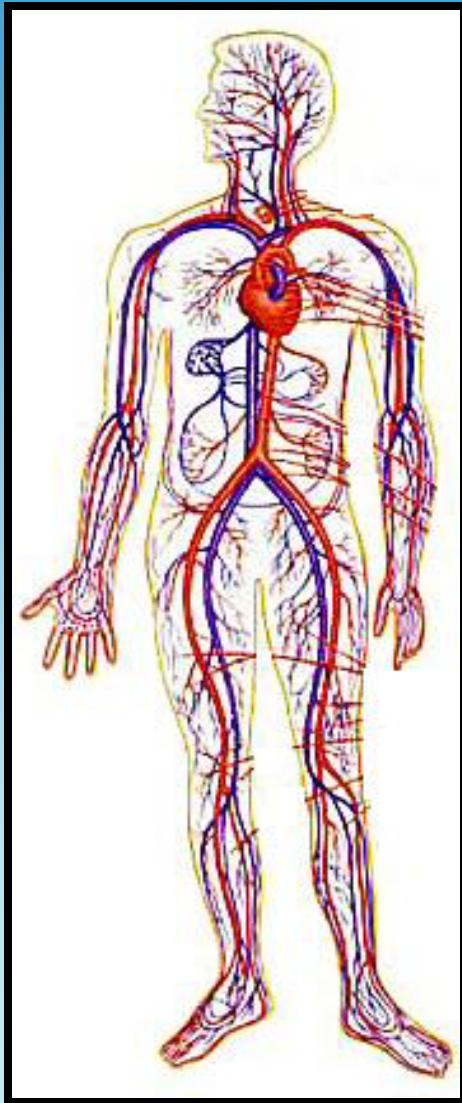


Your Blood

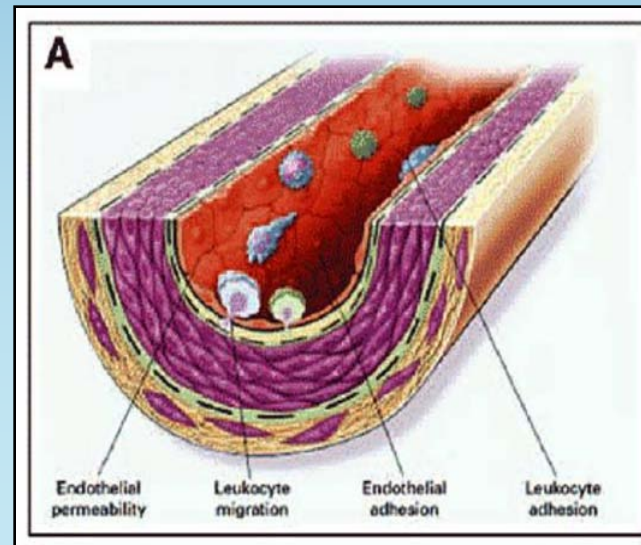
- Blood has **THREE** important types of cells:
 - **RED BLOOD CELLS (RBC)**
 - Carry Oxygen
 - **WHITE BLOOD CELLS (WBC)**
 - Fight Infection/Irritation
 - **PLATELETS**
 - Clump to “seal” off a cut
 - Scabs are made of platelets



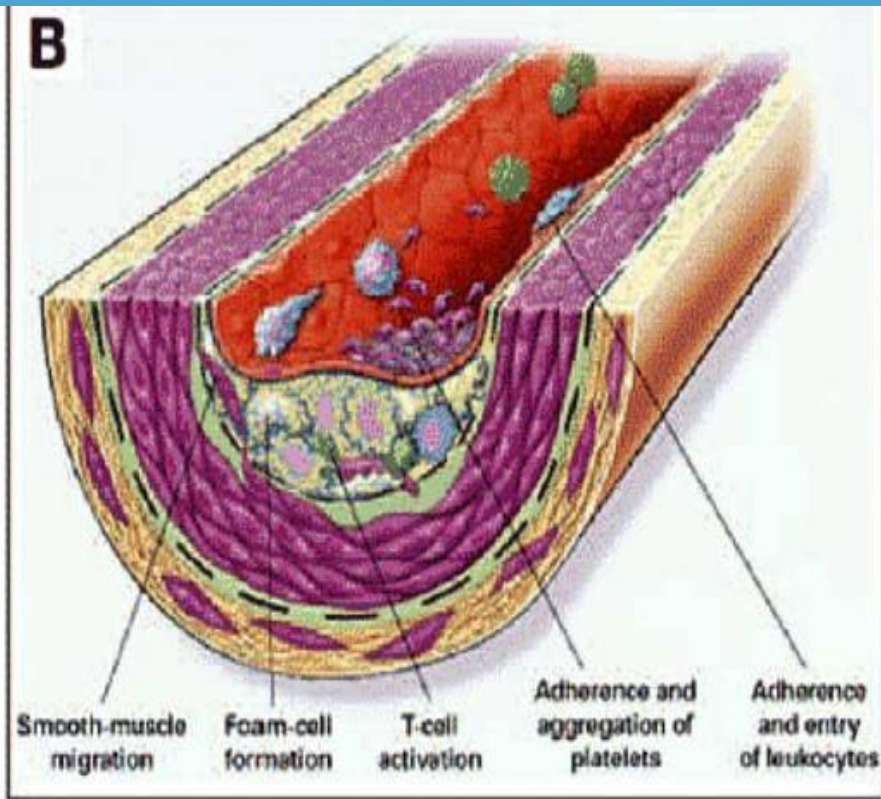
Healthy Blood Vessel



- Blood vessels have an inner lining
 - Runs through every vein, vessel, and artery in your body!
 - Sensitive to change
 - Can be damaged

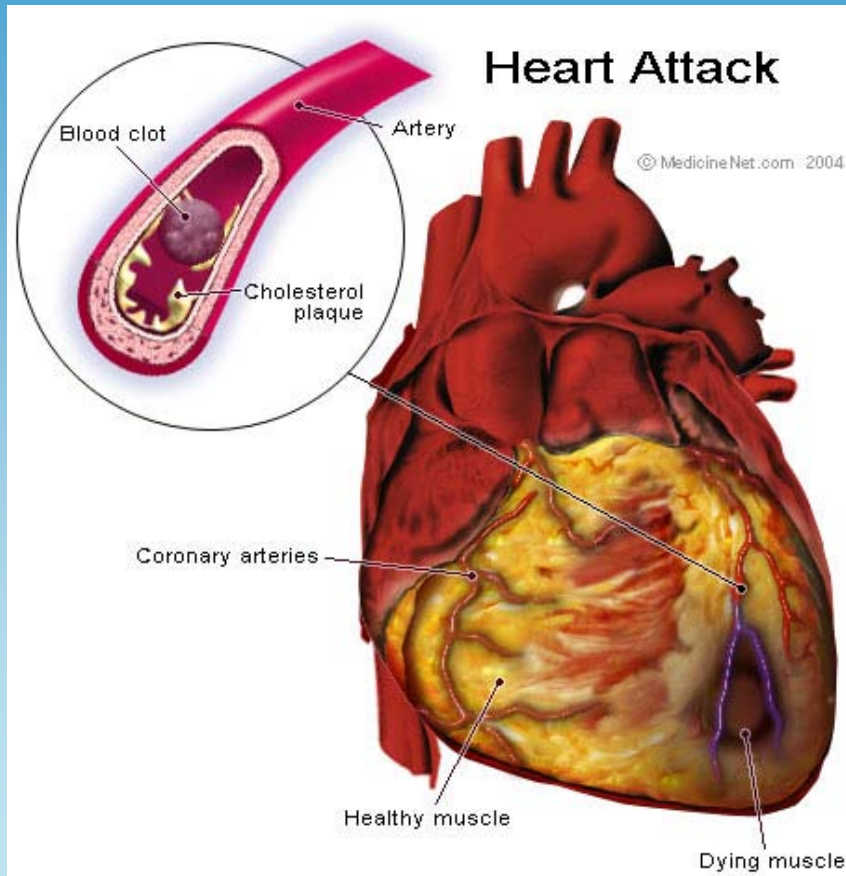


Unhealthy Blood Vessel



- The more irritated the veins get, the more white blood cells show up
- When there is infection or irritation, damaged tissue forms
- Arteries & Veins begin to harden because of the damaged tissue
 - Can result in Heart Attack, Stroke, Lack of Blood to the Brain

Heart Disease – Up Close



- Blood Vessels take oxygen and blood to the heart
- Blood Vessels can be blocked by clots
 - Reduces amount of oxygen to the heart
 - Leads to heart disease

Platelet Accumulation (Clumping)

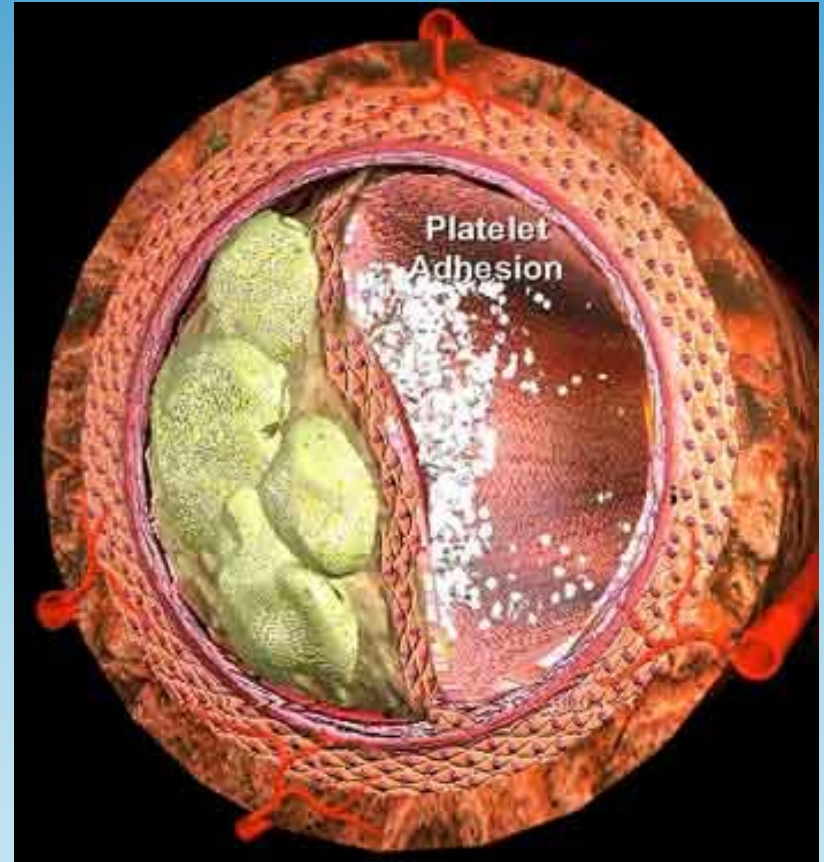
Secondhand Smoke (20 minutes of exposure) or Smoking



Inner Lining of Arteries & Veins gets swollen



Platelets begin to clump together and get stuck in Veins & Arteries

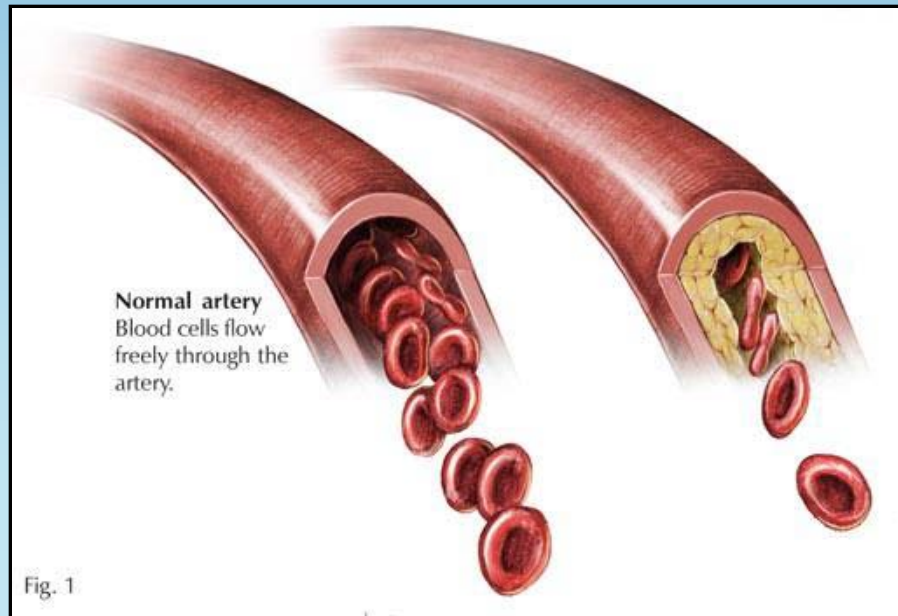


Arteries & Veins Begin to Close



- Arteries & Veins naturally open and close
 - Caused by a chemical (Nitric Oxide - NO) in the inner lining
 - Generally open!
 - Keeps the blood flow high, and arteries/veins clean

- Secondhand Smoking:
 - Reduces the production of this chemical (NO)
 - Reduces the amount of time an artery/vein will stay open
 - Clogs up the arteries
 - Reduces the amount of blood flow to heart and other organs



The Good



Helps move BAD cholesterol (LDL) back to the liver for removal from the bloodstream!

WAY TO GO
HDL!

The Bad



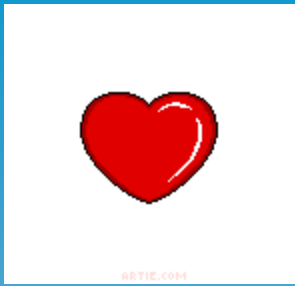
Likes to stick around and clog up arteries and veins, reducing blood flow.

BAD LDL, BAD!

The Ugly

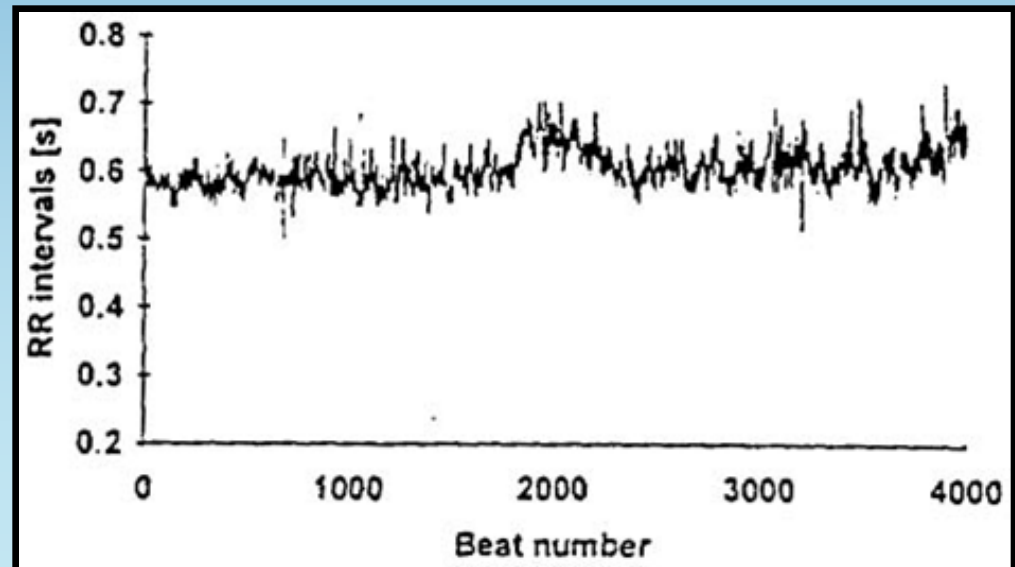


Smoking and Secondhand Smoke decreases HDL (The good guys!) in your blood.

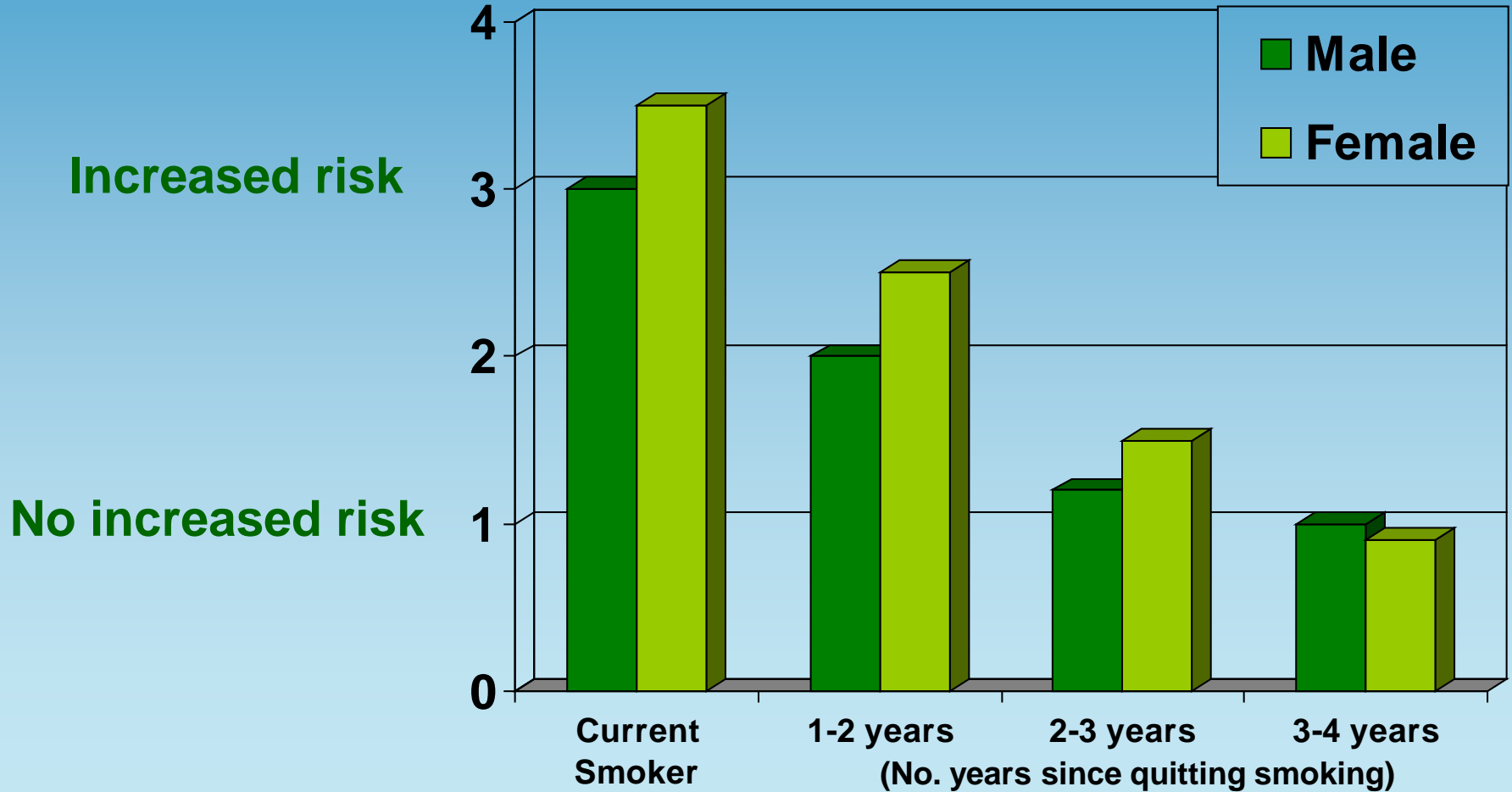


Heart Rate Variability (HRV)

- What is it?
 - Your heart rate due to breathing or chemical intake
 - Used to predict survival after heart attack
 - Studies show, lower HRV causes more sudden death in patients
- What does it have to do with Secondhand Smoke?
 - It reduces your HRV
 - Decreased chance of surviving a heart attack



Relative Risk of Heart Attack Comparison Between Smokers and Former Smokers





IN CONCLUSION...

- If you are breathing in secondhand smoke, you are just as likely (80-90%) to develop heart disease, as a smoker is.
- There are several causes of heart disease, and they all can interact with each other
 1. Platelet Clumping - causing blockage
 2. Irritation of the Inner Lining of Arteries/Veins – less blood flow
 3. Increased Stiffness in Arteries/Veins- more damaged tissue
 4. Closing of Arteries/Veins – less blood flow

References



- Barnoya & Glance. Circulation: Journal of the American Heart Association. 2005.

How Can We Use This Material?

- Provider 5As trainings
- Screening for secondhand smoke exposure
- Advocacy tool
- Target staff
- Patient education material
- Share presentation
- Topic for cessation media messaging
- Support for tobacco free healthcare campus policies