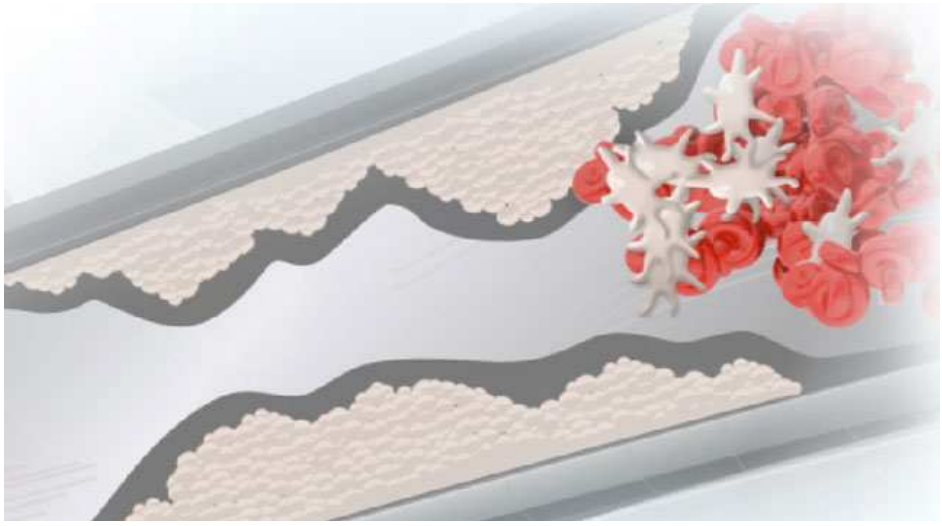
UNDERSTANDING ACUTE CORONARY SYNDROME

FAST FACTS

- Coronary heart disease (CHD) is the leading cause of death in the U.S. and in Europe
- Acute coronary syndrome (ACS) is a very common and life-threatening result of CHD. It occurs when a coronary artery is blocked by a blood clot, reducing blood supply to the heart
- ACS heart conditions include:
    - Myocardial infarction (MI, or heart attack)
    - Unstable angina (a very serious condition that indicates a heart attack could soon occur)
- Risk factors for ACS include family history, high cholesterol, high blood pressure, diabetes and tobacco use
- Despite available therapies, the risk of illness or death for patients diagnosed with ACS remains high:
    - Almost 30% of patients who leave the hospital after an ACS event are re-admitted within the first six months
- The main treatment goal for ACS patients is to prevent death or recurrent ACS by stopping the growth of existing clots and halting the formation of new clots



Blood Clot Formation in Coronary Artery Affected by Atherosclerosis
Image courtesy of Bayer HealthCare

Acute Coronary Syndrome

Coronary arteries send oxygen-rich blood to the heart to keep the muscle working and healthy. ACS occurs when a coronary artery is blocked by a blood clot, critically reducing blood supply to the heart.

ACS conditions include:

- Myocardial infarction (MI, or heart attack)
    - Patients can experience two different types of MI:
        - *Non-ST-segment elevation (NSTEMI)* – occurs when there is sporadic and partial blockage of the coronary artery that is severe enough to cause some heart muscle damage
        - *ST-segment elevation (STEMI)* – occurs when there is abrupt, sudden blockage of the coronary artery, usually resulting in a large amount of muscle damage. This type of heart attack is considered more serious and patients usually experience sudden, severe symptoms around the time the heart attack event begins
- Unstable angina
    - Unstable angina happens when a blood clot forms in a coronary artery and almost completely blocks the artery
    - This blockage, also called an occlusion, decreases blood flow and causes patients to feel chest pain – even when they are at rest[1]
    - Unstable angina can become a heart attack if the blood clot grows and completely blocks blood flow through a coronary artery, causing heart muscle to begin to die[2]

Causes of ACS

The essential underlying condition for ACS is plaque that collects in the inner walls of coronary arteries. This plaque build-up narrows the arteries, sometimes decreasing the amount of blood flow the heart receives over time. This process is called *atherosclerosis*.

If plaque from the wall of a coronary artery ruptures, a blood clot can form at the site of the rupture. If the clot is large enough to block the vessel and critically reduce blood flow, the heart muscle can be damaged. This process is known as *thrombosis.*[3]

Risk factors

ACS can be caused by a variety of factors, including a family history of heart attack or unstable angina. High cholesterol, high blood pressure, diabetes and tobacco use also can contribute to the buildup of plaque in the arteries which may lead to atherosclerosis. Medicines and healthy lifestyle changes are recommended to reduce these risk factors.[4,5]

How common is ACS?

U.S. Statistics

- CHD is the leading cause of death in the U.S., and ACS is a very common complication of this disease.[6]
- 1.2 million new or recurrent coronary attacks occur in the U.S. annually.
    - Nearly 40% of patients who experience one of these attacks will die from it.[7]
- Each year, 310,000 CHD deaths occur either out of the hospital or in the hospital emergency departments.[8]

- In 2005, more than 830,000 patients were discharged from the hospital with either a primary or secondary diagnosis for heart attack. Nearly 560,000 patients were discharged with a primary or secondary diagnosis of unstable angina.[9]
    - Up to 30% of patients who leave the hospital after an ACS event are re-admitted within the first six months.[10]

- Nearly 40% of people who experience a heart attack in a given year will die from it.[11]

Global Statistics

- Approximately 7.2 million people worldwide die each year from CHD.[12]

- CHD is the most common cause of death in Europe, and ACS is a very common complication of this disease.[13]

- Unstable angina and non-ST-segment elevation heart attacks are responsible for approximately 2.5 million hospital admissions worldwide and are a major cause of mortality and morbidity in Western countries.[14]

- In both developed and developing countries, 40% to 75% of all heart attack victims die before reaching the hospital.[15]

Economic burden of ACS

The direct and indirect costs of ACS are substantial.[16] In 2008, the U.S. estimated annual direct costs to the healthcare system for CHD – a large portion of which were associated with ACS – were nearly $88 billion, while estimated indirect social and economic costs due to lost productivity were almost $69 billion.[17]

Health system costs in the EU attributable to cardiovascular disease (CVD) were nearly €110 billion in 2006, and approximately one-fifth of these expenditures were due to CHD. Inpatient hospital care for CHD patients accounted for more than half of these costs, while treatments for these patients accounted for an additional one-fourth of the costs.[18]

Currently available ACS treatments

The main treatment goal for ACS patients is to prevent death or recurrent ACS by stopping the growth of existing clots and halting the formation of new clots. Antiplatelet treatments help prevent blood platelets from clumping together and forming clots. Two common antiplatelet therapies used to treat ACS are aspirin and thienopyridines (such as clopidogrel). The combination of these two treatments, used for a period of six months to one year, is widely recommended for ACS patients. Antiplatelet drugs may also be combined with an anticoagulant or blood thinner (such as warfarin), to help manage the condition.

In addition to medications, coronary artery stents and other cardiac surgery techniques can be used to treat ACS.[19,20,21]

To learn more about thrombosis please visit www.thrombosisadviser.com

To learn more about 'Xarelto' please visit www.xarelto.com

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