

About Acute Coronary Syndrome (ACS)



Fast facts

- ◆ **Coronary heart disease (CHD) is the leading cause of death in the US and in Europe**
- ◆ **Acute coronary syndrome (ACS) is a very common and life-threatening result of CHD and occurs when a coronary artery is blocked by a blood clot, reducing blood supply to the heart**
- ◆ **ACS heart conditions include:**
 - Myocardial infarction (MI)
 - Unstable angina
- ◆ **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**

Acute Coronary Syndrome (ACS)

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

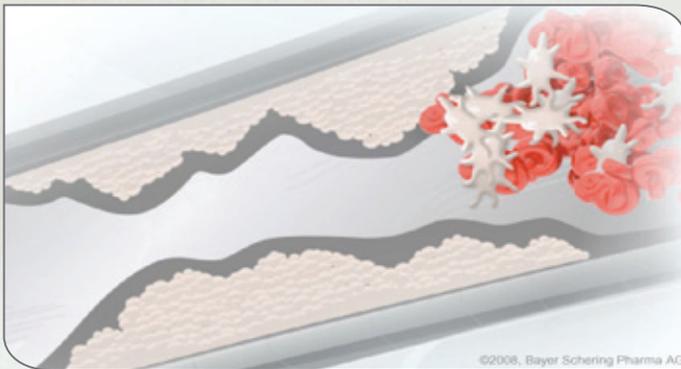


Fig 1: Blood Clot Formation in Coronary Artery Affected by Atherosclerosis. Image courtesy of Bayer HealthCare

ACS conditions include:

◆ Myocardial infarction (MI)¹

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 an 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 begins

◆ Unstable angina

- Unstable angina occurs 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 rest²
- 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 die²



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.²

Risk factors

There are a variety of risk factors for ACS, including a family history of heart attack or unstable angina. High cholesterol, high blood pressure, diabetes and tobacco use can also contribute to the build up of plaque in the arteries which may lead to atherosclerosis. Medicines and healthy lifestyle changes are recommended to reduce these risk factors.^{3,4}

How common is ACS?

- ◆ Approximately 7.2 million people worldwide die each year from CHD⁵
- ◆ CHD is the most common cause of death in the US and Europe, and ACS is a very common complication of this disease^{6,7}
- ◆ 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 countries⁸
- ◆ In both developed and developing countries, 40% to 75% of all heart attack victims die before reaching the hospital⁹
- ◆ Up to 30% of patients who leave the hospital after an ACS event are re-admitted within the first six months¹⁰

Economic burden of ACS

The direct and indirect costs of ACS are substantial.¹⁰ In 2008, the US 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.¹¹ 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.¹²

Currently available ACS treatments

The main treatment goal for ACS patients is to prevent death or recurrent ACS by stopping 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.

In addition to medications, coronary artery stents and other cardiac surgery techniques can be used to treat ACS.^{13,14,15}

Antiplatelet drugs may also be combined with an anticoagulant to help manage the condition.

New oral anticoagulants targeting single components of the coagulation pathway (Factor Xa and thrombin) are currently in clinical development for the secondary prevention of ACS.¹⁶



References

- 1 Amsterdam E et al. Short Stay Management of Chest Pain. *Contemporary Cardiology*. 1995;55-65
- 2 Bassand JP et al. *Eur Heart J*. 2007;28:1598-660
- 3 Smith SC Jr et al. *J Am Coll Cardiol*. 2006;47:2130-9
- 4 NCEP Expert Panel. *Circ*. 2002;106:3143-421
- 5 World Health Organisation. 2002; http://www.who.int/cardiovascular_diseases/en/cvd_atlas_14_deathHD.pdf
- 6 American Heart Association. Heart Disease and Stroke Statistics : 2008 Update At-a-Glance. 2008; 14
- 7 British Heart Foundation. European Cardiovascular Disease Statistics, 2000
- 8 Grech ED et al. *Brit Med J*. 2003;326:1259-61
- 9 Integrated Management of CV Risk. WHO Meeting 2002
- 10 Turpie AGG. *Am J Manag Care*. 2006;12:S430-4
- 11 American Heart Association. Heart Disease and Stroke Statistics: 2008 Update At-a-Glance. 2008: 37
- 12 British Heart Foundation Statistics Website. 2008; <http://www.heartstats.org/datapage.asp?id=4541>
- 13 Rothberg MB et al. *Ann Intern Med*. 2005;143:241-50
- 14 Orford JL et al. *Am Heart J*. 2004;147:463-7
- 15 Khurram Z et al. *J Invasive Cardio*. 2006;18:162-4
- 16 Turpie AG. New oral anticoagulants in atrial fibrillation. *Eur Heart J*. 2007;29:155-65

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



**MEDIA BACKGROUNDER
FOR EX-US AND EX-UK USE ONLY**

RIVAROXABAN

August 2010

www.bayer.com



 Bayer HealthCare
Bayer Schering Pharma

RIVAROXABAN

**MEDIA BACKGROUNDER
FOR EX-US AND EX-UK USE ONLY**

August 2010