

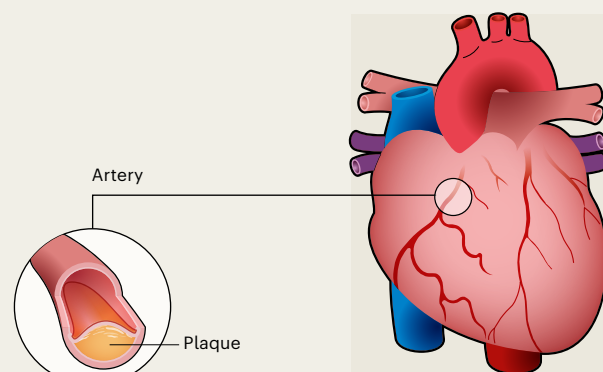
# THE CONSEQUENCES OF ISCHAEMIA

The incidence rates of many heart concerns in wealthy countries, such as the United Kingdom, are declining. But tackling these concerns is still a stubborn challenge: ischaemic heart disease is the leading cause of death globally. The pathologies of heart conditions are complex and interwoven, but they often start with ischaemia.

By Benjamin Plackett; infographic by Mohamed Ashour

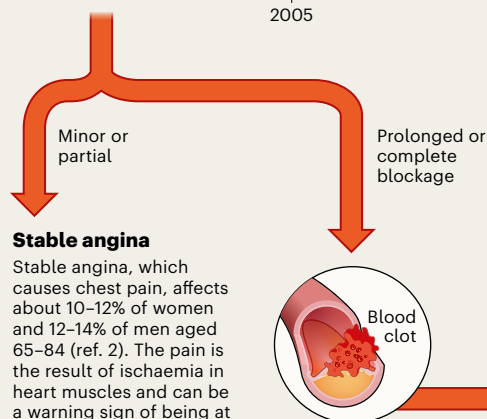
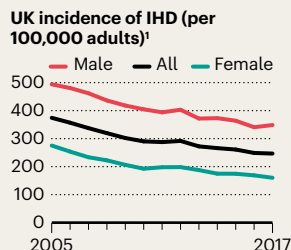
## 9 MILLION

deaths per year globally from ischaemic heart disease<sup>5</sup>



### Ischaemic heart disease (IHD)

The heart's arteries narrow owing to the build-up of fatty deposits called plaques, reducing blood flow to the heart muscle. How symptoms manifest depends on the severity of this ischaemia.



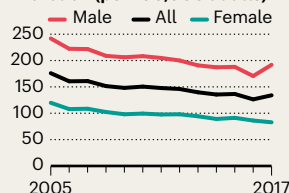
### Stable angina

Stable angina, which causes chest pain, affects about 10–12% of women and 12–14% of men aged 65–84 (ref. 2). The pain is the result of ischaemia in heart muscles and can be a warning sign of being at risk of a heart attack. But the condition can be managed with lifestyle changes.

### Myocardial infarction

Continued ischaemia causes plaques to rupture into the blood stream. The heart responds by forming a blood clot, which makes the ischaemia worse. Depleted oxygen supplies cause substantial cell death. The severity of the infarction, or heart attack, is mainly based on the extent of cell death.

### UK incidence of myocardial infarction (per 100,000 adults)<sup>1</sup>

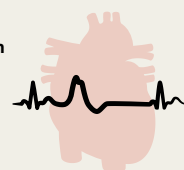
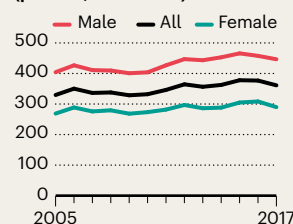


Small or medium heart attack

### Atrial fibrillation

This is the most common problem associated with the heart's rhythm, and is characterized by an abnormally fast and irregular heartbeat. This form of arrhythmia is a major preventable cause of heart failure and cardiac arrest. Its growing incidence is driven by an ageing global population.

### UK incidence of atrial fibrillation (per 100,000 adults)<sup>1</sup>

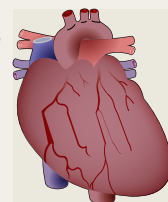
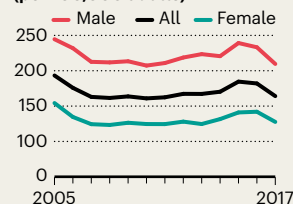


Large, repeated or both

### Heart failure

The damage caused by a heart attack can lead to the heart becoming swollen, leaving it unable to pump blood efficiently. Incidence of heart failure is falling, but many people have symptoms that could have been picked up before they needed to go to hospital<sup>3</sup>, suggesting a high number of undiagnosed cases in the community.

### UK incidence rates of heart failure (per 100,000 adults)<sup>1</sup>



Single and massive

### Cardiac arrest

If a heart attack causes cardiac arrest, the heart stops pumping blood, causing organs and tissues to die if cardiopulmonary resuscitation is not performed. In the United Kingdom, around 30,000 cardiac arrests happen out of hospital each year. Just 10% of people survive<sup>4</sup>.



Sources: 1. British Heart Foundation *Heart & Circulatory Disease Statistics 2020* Available at <http://go.nature.com/2sjhs7q> (2020). 2. National Heart, Lung and Blood Institute *Morbidity & Mortality: 2012 Chart Book on Cardiovascular, Lung and Blood Diseases* (NIH, 2012). 3. Bottle, A. et al. *Heart* **104**, 600–605 (2018). 4. British Heart Foundation 5. Khan, M. A. B. et al. *Cureus* **12**, e9349 (2020).