

Anti-cancer drugs could prevent the hardening of blood vessels that cause heart attack and stroke

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Credit: University of Sheffield

Anti-cancer drugs could prevent the build-up of fatty plaques in blood vessels which cause heart attack and stroke, a new study by the University of Sheffield has shown.

The new research, funded by the British Heart Foundation, suggests drugs which are already in clinical trials for the treatment of cancers could be repurposed to prevent [atherosclerosis](#) – the build-up of fatty plaques which can lead to heart attack and stroke.

Scientists from the University of Sheffield's Department of Infection, Immunity and Cardiovascular Disease found the twists, turns and branches in our arteries create complex flow patterns that increase the risk of atherosclerosis - a hardening of blood vessels due to fatty plaques.

As the blood swirls around at these junctions and bends, the disrupted flow is sensed by the walls of the arteries. This leads to inflammation and surface damage, which provides a foothold for fatty deposit to build up.

The researchers have shown this response is triggered by a protein called hypoxia-inducible factor (HIF), which controls cell metabolism and is known to have a role in some types of cancer.

Drugs that target HIF are already in [clinical trials](#) for the treatment of cancer, but this new research suggests they could be repurposed to prevent atherosclerosis.

Professor Paul Evans, lead author from the University of Sheffield's Department of Infection, Immunity and Cardiovascular Disease, said: "We've found an exciting new target for treating atherosclerosis, and we know there are cancer drugs that we could potentially repurpose.

"That would save us having to develop something from scratch, and means we're that bit nearer to treatments that doctors and patients will be able to benefit from.

"The bends and branches in our blood vessels are completely normal but we tend to find this is where [fatty deposits](#) are most likely to build up. We now have an explanation for this, along with the potential to develop treatments that prevent atherosclerosis."

Professor Jeremy Pearson, Associate Medical Director at the British Heart Foundation, said: "Stopping the build-up of fatty plaques in arteries has the potential to significantly reduce deaths from [heart attack](#) and stroke.

"As research reveals more of what goes on in our [blood vessels](#) to allow [fatty plaques](#) to develop, we can find ways to prevent this build-up. It's too early to say for certain, but treatments targeting HIF might one day allow us to do this."

The study is published in the journal
Arteriosclerosis, Thrombosis, and Vascular Biology.

Provided by University of Sheffield

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