

Promising new drug could manage high blood pressure for up to six months with a single injection

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A new drug could help lower persistent high blood pressure for up to six months following a single injection, a study suggests. If successful, the

drug—zilebesiran—would provide a more convenient method for the management of high blood pressure, which is routinely treated through daily tablets. The work is published in the *New England Journal of Medicine*.

More than half of patients with [high blood pressure](#)—also called hypertension—do not take all of their prescribed medicine, leading to inconsistent blood pressure control.

Better management of the condition could reduce the risk of stroke, heart attack and premature death, experts say.

Sustained drop

The international team, including experts from the University of Edinburgh's Center for Cardiovascular Science, ran the early stage [clinical trials](#) across four UK sites.

Patients who received zilebesiran experienced a substantial reduction in systolic blood pressure—the force with which the heart pushes blood out and round the body—which lasted up to six months.

On average, [systolic blood pressure](#) lowered by over 10 mmHg at a 200mg dose or more of the drug, and more than 20 mmHg at the highest dose of 800mg. A drop of this size can take someone with high blood pressure to within a much safer range.

Blood pressure naturally goes up and down throughout the course of the day, making it difficult to treat.

The study found that the drop in blood pressure seen in patients who were treated with zilebesiran was consistent over 24 hours.

Novel approach

Developed by US-based company Alnylam, zilebesiran works by preventing the production of angiotensin—a hormone in the body that narrows blood vessels, leading to raised blood pressure. A number of existing drugs used to treat hypertension also target angiotensin.

Zilebesiran uses a novel approach to interfere with the machinery in the liver that makes the protein angiotensinogen, the source of all forms of angiotensin.

Known as small interfering RNA (siRNA), zilebesiran turns off the gene responsible for producing angiotensinogen, preventing it from being made.

The siRNA approach has already been used to develop treatments for a number of other conditions, with the ability to silence specific genes with high accuracy and effects lasting many months.

Safety data

A total of 107 patients with hypertension took part in the trial—80 received a single injection of zilebesiran under the skin, while 32 received a placebo containing no active ingredients. Five patients who initially received the placebo were later moved to zilebesiran.

Experts caution that further studies involving a larger number of patients are needed to robustly investigate the safety of the drug and provide further insights into its potential to improve clinical outcomes in people with hypertension.

"This is a potentially major development in hypertension. There has not

been a new class of drug licensed for the treatment of high blood pressure in the last 17 years. This novel approach leads to a substantial reduction in blood pressure, both by day and night, that lasts for around six months after a single injection," says Professor David Webb, Christison Chair of Therapeutics and Clinical Pharmacology at the University of Edinburgh, who led the Edinburgh study site.

"This is attractive because it helps avoid the difficulty with adherence to treatment seen with current medicines. The next stage of clinical trials will focus on developing robust safety data, and broader evidence of efficacy, before zilebesiran can be licensed for use."

More information: Akshay S. Desai et al, Zilebesiran, an RNA Interference Therapeutic Agent for Hypertension, *New England Journal of Medicine* (2023). [DOI: 10.1056/NEJMoa2208391](https://doi.org/10.1056/NEJMoa2208391)

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