

# Risk of brain hemorrhage appears transmissible via blood transfusion

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A major study published in *JAMA* led by researchers at Karolinska Institutet suggests that a possible cause of spontaneous brain hemorrhage could be transmitted via blood transfusion. At the same time, it is very

unlikely that anyone should suffer a brain hemorrhage after receiving donated blood.

A common cause of spontaneous, recurring brain hemorrhages is the vascular disease [cerebral amyloid angiopathy](#) (CAA), in which proteins accumulate along the tiny blood vessels of the brain. Several studies have shown that CAA can be transferred from one individual to another through neurosurgery and probably via treatment using a certain type of growth hormone.

## **Few affected individuals**

A new study by researchers from Karolinska Institutet, Södersjukhuset, Karolinska University Hospital in Sweden, the University of Copenhagen in Denmark, KU Leuven in Belgium and other institutions shows that patients who have received blood from donors who later suffered recurring brain hemorrhages are more than twice as likely to suffer a brain [hemorrhage](#) themselves.

The findings suggest that some factor that can give rise to spontaneous brain hemorrhages can be spread through [blood transfusion](#). However, as only 0.1% of the donors in the study subsequently suffered recurring [brain hemorrhages](#) there were consequently only a few affected patients.

"Blood transfusions are relatively common, which makes possible negative effects an important public health issue," says the study's last author Gustaf Edgren, researcher at the Department of Medicine, Karolinska Institutet (Solna) and specialist physician at Södersjukhuset. "However, in this case, it's very unlikely that you'd suffer a [brain](#) hemorrhage from something transmitted through a transfusion."

## **CAA could be transmissible**

According to the researchers, the most important implication of the study is instead that it adds further support to the hypothesis that CAA can be transmitted between individuals, which, if true, can have consequences in several fields.

The study drew on the Swedish-Danish transfusion database SCANDAT, which contains data on [blood donors](#) and patients receiving a transfusion from the 1970s onwards. A total of more than a million patients were included. The primary analyses were conducted in Sweden and then repeated with the Danish data, with almost identical results.

## Confirmation needed

The researchers now hope to corroborate the hypothesis that the link between [brain hemorrhage](#) and blood transfusion concerns CAA. They will therefore be examining samples from the Danish Blood Donor Study biobank to see if they can identify aberrant proteins associated with the disease.

The plan is also to obtain CAT and MR scans from the affected donors and patients to see if they might also be able to support the hypothesis.

"This study does not demonstrate causality, so the observed increase in risk could depend on other factors," says the study's first author Jingcheng Zhao from Dr. Edgren's group at Karolinska Institutet. "More research is needed to confirm our findings and understand the potential underlying mechanism."

**More information:** Intracerebral hemorrhage among blood donors and their transfusion recipients, *JAMA* (2023). [DOI: 10.1001/jama.2023.14445](#)

Provided by Karolinska Institutet

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