

Even the tiniest stroke can damage the brain

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It seems size does matter in the brain. Even the smallest stroke can cause widespread damage.

Researchers led by [David Kleinfeld](#) of the University of California, San Diego, induced tiny strokes in rats by blocking blood vessels called arterioles, stopping blood from reaching capillaries deeper in the brain.

Blocking just a single arteriole caused cell death in all directions for hundreds of micrometres after the blockage. Block several and you can knock out entire brain regions as the damage travels even in areas still fed by intact vessels. It was previously assumed that strokes on this scale would be innocuous.

The damage impaired the animals' ability to judge when a gap between two platforms was too wide to cross. But giving the rats injections of memantine – a drug already approved to treat people with Alzheimer's disease – within 45 minutes of the stroke prevented both the damage and loss of function even when multiple vessels were blocked.

In people, these "silent" mini-strokes go unnoticed and are undetectable by brain scans, says Kleinfeld, but could have an impact on brain function over time.

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