

Using the Vivli platform, James Brorson found that stroke recurrence is best described by a two-state kinetic model.

- People who have a stroke are often at risk for a second stroke.
- The team accessed data from three large trials (25K+ total participants) via Vivli.
- Their analysis suggests that two distinct states follow acute cerebral ischemic events, which could impact clinical treatments to prevent stroke recurrence.

Background and research question

Dr. James Brorson and a team of colleagues set out to examine data gathered from participants in several large trials in the aftermath of a first stroke event to determine whether treatment decisions could be made more precisely based upon analysis of timing and rates of stroke recurrence.

They theorized that a two-state kinetic model would fit the survival data for each of these recent trials of acute secondary prevention better than would a model assuming only a single clinical state after the initial minor stroke.

Results and impact

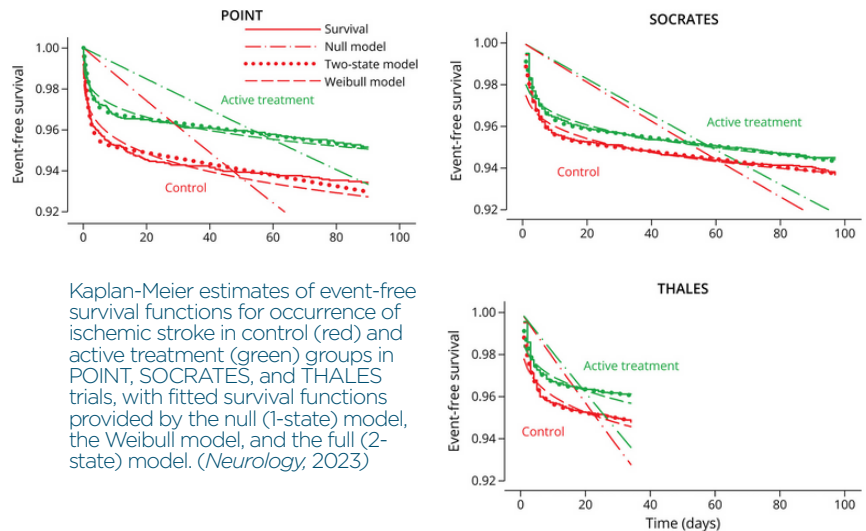
They found that recurrence of stroke is well-described by a two-state kinetic model postulating vulnerable and stabilized states and that these states are subject to differential impact of immediate or delayed therapies. Their findings also indicated that enhanced antiplatelet regimens only affected the recurrence rates during a brief period in the vulnerable state.

The authors are working on a second phase of this project to harmonize and curate the data from the first phase into a single large dataset that they plan to re-share in the Vivli data repository to support further research in this area.

Vivli platform use

Dr. Brorson and his team sought to harmonize, merge, and assess data from the POINT, SOCRATES and THALES trials conducted by AstraZeneca, which had more than 25,000 combined participants. This provided sufficient statistical power to detect modifiers of early and late kinetics of stroke recurrence.

The team developed a two-state kinetic model of stroke recurrence. This model proposes an initial vulnerable state with a higher rate of stroke recurrence which rapidly transitions to a stabilized state with a lower rate of recurrence.



Read more

- [Neurology \(2023\)](#)
- [Vivli data request #9734](#)
- [How to request data from Vivli.](#)

“The Vivli data repository enabled us to access original data from multiple trials, compare estimates, and harmonize data.”



James Brorson, MD