

# High blood pressure actually drives us insane in the membrane

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Many stroke victims arrive at the hospital too late to unblock the diseased artery. At the first symptoms—weakness on one side of the body, arm or facial paralysis, difficulty speaking—call emergency responders without delay...

When they does not cause death, strokes are the second leading cause of dementia in the Western world. Here in Canada, strokes strike 50,000 people aged 60 and over each year, according to Statistics Canada. That's one person every 10 minutes, an especially worrisome figure given that it also occurs in people under 55... "We live in a society that is being killed by its arteries. The main cause of stroke is high blood pressure, which blocks the small vessels of the brain and makes it less efficient," said Dr. Christian Stapf, a neurologist at the CHUM's Hôpital Notre-Dame. Indeed, the accumulation of these lesions results in premature aging of the brain and increases the risk of cognitive disorders and dementia. "It makes you bête dans la tête (insane in the membrane)," said the neurologist.

After 12 years at the Hôpital Lariboisière in Paris, where he led the acute vascular unit, this internationally renowned physician was recently recruited by the University of Montreal as a

professor in the Department of Neuroscience and researcher at the CHUM Research Centre (CRCHUM). "I love Montreal and I look forward to winter. I came in January; it was -17° and everything was white. It was so beautiful!" exclaimed this outdoors enthusiast. Dr. Stapf has brought to Quebec expertise in vascular neurology and epidemiology of vascular malformations and [brain](#) hemorrhage, helping to establish a unique research network in Canada. "We want to bring together the expertise of all specialists in the field of neuroscience around diseases that cause stroke, and examine the most appropriate interventions for patients," he explained. "Montreal has extraordinary neurologists, neuroradiologists, and neurosurgeons. We just have to bring them together. Since we often ask the same questions, it shouldn't be too difficult," said the doctor of German origin, who speaks impeccable French.

## Not treating is sometimes safer

Despite his jovial side, Stapf is a serious doctor and researcher. Winner of several awards, including the American Heart Association 2001 Robert G. Siekert New Investigator Award in Stroke, his work has influenced the care of patients worldwide.

In terms of research, he and his colleagues made headlines in 2013 when the results of an international study conducted in 21 countries among some 3,000 patients with intracerebral hemorrhage were published in the *New England Journal of Medicine*. "We showed that when blood pressure was rapidly lowered, patients survived with smaller hematomas and less sequelae," said Dr. Stapf, who was the European coordinator and co-principal investigator of the study (called "Interact 2.")

The following year, another large clinical trial, ARUBA, made headlines when its results were published in *The Lancet*. "The results were earth-shattering," said Stapf. The aim of the study was to

compare the risk of death and symptomatic stroke in two groups of patients with an unruptured brain arteriovenous malformation. Subjects in the first group received medical treatment in which the malformation was corrected. For the others, the specialists preferred to wait a few years before considering surgery. "After 224 patients, the study was terminated by the Supervisory Committee. Imagine there were five times more strokes in the group whose malformation was corrected! It was concluded in this case that it was safer to live with the brain malformation than trying to repair it."

### **Six hour maximum**

"Strokes always occur suddenly, and time is of the essence," said the doctor, whose work often leads him to the emergency room. For blocked arteries, response time is six hours. For each hour without treatment, the brain loses as many neurons as in 3.6 years of aging, says a recent U.S. study. "It is in the first hours that we can change the fate of patients," noted Dr. Stapf, whose task is to assess as quickly as possible the extent of brain damage after a stroke and choose the best type of treatment.

In light of the results of brain imaging, the doctor may have to perform thrombolysis. "This procedure involves injecting a drug intravenously to destroy the clot," he described. Sometimes, a neuroradiologist colleague must intervene and perform a thrombectomy, or removal of a larger clot directly in the brain using a catheter." Although quite effective, these techniques are not without risk – so much so that deciding to intervene or not is sometimes like a puzzle.

In his leisure time, Dr. Stapf sits down at his piano or play bass, instruments he learned in his childhood. "I work on my technique and my interpretations. It relaxes me. My repertoire ranges from classical, to contemporary music, to jazz." The day before our interview in mid-November, the doctor gave a concert with the Serenade Ensemble at Montreal's Notre-Dame-de-Bonsecours Chapel before an audience of 300. The previous day, the ensemble played at St. Lambert Church. "A researcher colleague at the CRCHUM, Andrés Finzi, who is also a violinist, recruited me. I am very

happy. I feel so welcome here. It's wonderful," he said.

### **Stroke victims becoming younger**

A stroke occurs when a blood vessel in the brain is blocked by a clot or breaks under excessive blood pressure, explained the neurologist Dr. Christian Stapf. "About 80% of strokes are ischemic, or caused by clotting; the remaining 20% are hemorrhagic, or caused by uncontrolled bleeding," he said. The brain area irrigated by this vessel is deprived of oxygen or threatened by hemorrhaging, leaving sequelae (paralysis, loss of speech), sometimes permanent, or resulting in death.

Victims are usually 60 years or older. But recent studies have shown that the age for a first stroke has decreased. To explain this phenomenon, experts point toward lifestyle in modern societies. "Cigarette smoking, high [blood pressure](#), and physical inactivity are the main risk factors for stroke," said Dr. Stapf. "To live long and healthy, take care of your arteries!"

Provided by University of Montreal

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