

Global standards for Alzheimer research under development

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There are, simply put, a raft of diagnostic tests for Alzheimer disease and no single test that can make an absolute diagnosis with anything like 100% accuracy.

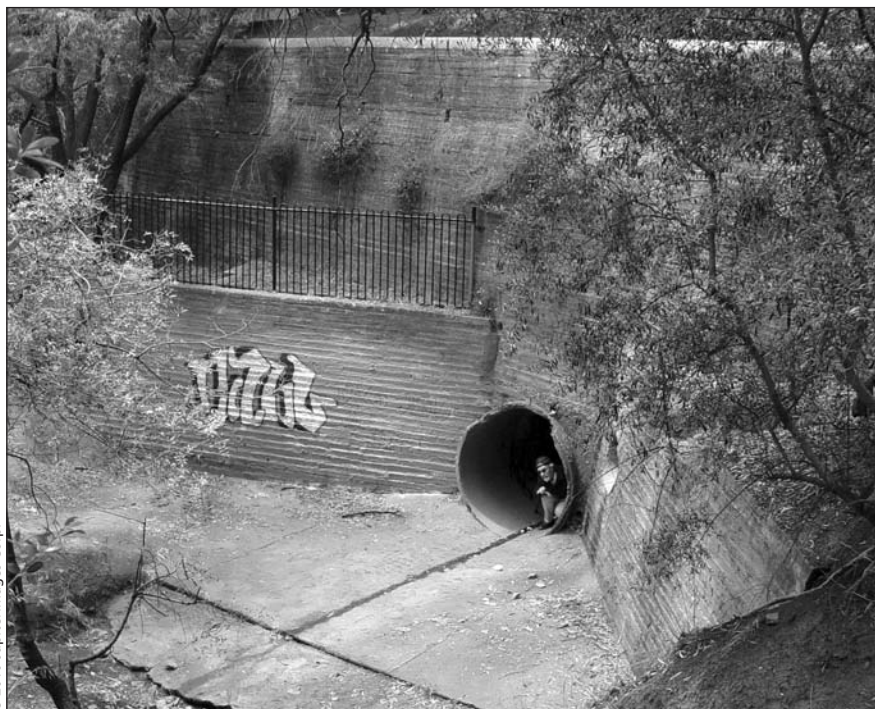
There are biomarker tests measuring beta-amyloid, tau protein and neural thread protein levels in cerebrospinal fluid and urine. There are mental status examinations evaluating thought processes, cognitive impairment and even, attitude. There are also blood tests, a lumbar puncture test and an array of neurological tests.

The diagnosis of Alzheimer disease is “not as straight forward as you would think,” says Dr. Jack Diamond, scientific director of the Alzheimer Society of Canada.

While most people associate Alzheimer disease with certain behavioural symptoms, like confusion and forgetfulness, a lot of research related to diagnosis has focused on physiological signs of neurodegenerative diseases, he says. But some of the biomarkers associated with the disease can be found without the presence of dementia, for instance, in people with Down Syndrome or mild cognitive impairments.

Compounding that is the fact that different countries favour different diagnostic tests, Diamond says. “There is a need to have a universal agreement [on what constitutes a diagnosis]. ... Nobody doubts when you have cancer or arthritis, but, when it comes to Alzheimer’s, there is disagreement not just between countries, but between clinics.”

That may ultimately change as a result of a new partnership between the Canadian Institutes of Health Research (CIHR) and research centres in Germany and the United Kingdom that aims to ensure that research into Alzheimer and other neurodegenerative diseases is comparable. The £3 million three-year program — to which Canada will contribute \$1.26 million — will focus on



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The Alzheimer Society of Canada projects that the number of Canadians living with Alzheimer disease and other forms of dementia will leap to 1.125 million in 2038 from 500 000 in 2008.

creating global standards for animal models, brain imaging and biomarkers.

“The idea is really to make sure that these guys are networking together, getting to know each other, talking about the same things, using the same protocols, using the same standards, so that we can really synchronize our activities,” explains Dr. Alain Beaudet, president of CIHR. “I believe it will save a lot of time, not to mention a lot of money.”

Past research collaborations have encountered problems because of the absence of common standards, Beaudet says. “We’re multiplying models and markers. Sometimes there’s full duplication. We’re not sharing enough and very often we can’t share because we’re not talking about the same thing.”

Diamond hopes the development of global standards will help to resolve the “curious dissociation between the recognition of dementia and what’s going on in the brain to cause it.”

The three-year initiative will look at “correlating the psychological and the biological results if we can,” Beaudet says. “But we’ll never be able to do that if we’re not talking about the same thing, if we don’t define the criteria and if we don’t standardize things.”

He also hopes that the program will also lay the foundation for his proposed international initiative on Alzheimer disease and related dementias (www.cmaj.ca/cgi/doi/10.1503/cmaj.109-3064 and www.cmaj.ca/cgi/doi/10.1503/cmaj.091124).

“We really want to get involved on a fairly broad scale with the Europeans into doing research on Alzheimer’s disease because we do believe that a union of efforts in that area is absolutely necessary,” he says.

To that end, the development and adoption of global standards is an important first step, says Beaudet. “It’s focused. It’s setting the stage for future

collaborations. It's setting the stage for a better usage of data and sharing of data."

International collaboration will be essential to future research on Alzheimer disease and others forms of dementia, says Dr. Serge Gauthier, director of the Alzheimer Disease Research Unit at the McGill Centre for Studies in Aging, in Montréal, Quebec.

"The field of Alzheimer's is so complex now that you have to work with people in different fields and we may not have all of the expertise here in Canada at a given time," explains

Gauthier. "Some countries may have animal models and we may have imaging resources, so this is complimentary work. For example, right now in Canada we don't have a lab to process spinal fluid examinations, but they do that very well in the UK and Norway, so we could learn from them."

"Many of the most important papers are already written jointly by the investigators of these different countries," Gauthier adds. "I publish, for instance, with Germans and people from the UK on a regular basis."

But nation-based studies will still be necessary in order to verify results in genetically diverse populations, he quickly adds. "The way I would look at it is if you find something in one country and one population, you need to find if it's applicable elsewhere. The advantage of partnerships between countries will be exactly that, to avoid finding things that may not be relevant to everyone. ... Red wine may be good to the French, but not so in Japan." — Elyse Skura, Ottawa, Ont.

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