Bridging the dementia gap

Advances are being made in understanding the pathology and biomedical basis of Alzheimer disease and other forms of dementia but those aren't being translated to the bedside because the Canadian government hasn't developed a mechanism to fund clinical trials of promising new therapeutics, a leading neuroscientist says.

"There's a fundamental dissociation between discoveries in science and putting to work things at the bedside," decried Dr. Patrick McGeer, professor emeritus in the Faculty of Medicine at the University of British Columbia, during a symposium of the American Association for the Advancement of Science's (AAAS) annual meeting, which was held Feb. 16–20 in Vancouver.

The pharmaceutical industry often has no interest in pursuing promising therapies by funding clinical trials, McGeer told delegates. For example, long-term use of anti-inflammatories such as ibuprofen have been linked to reduced risk of Alzheimer disease but a randomized clinical trial has not been undertaken because "no company wants to pay for an ibuprofen trial when it can be bought in [a store] for five cents a pill," he said. "The cheaper the agent, the less incentive to fund expensive clinical trials."

To redress that, the government should create innovative funding mechanisms, such as clinical trial set-asides within research operating grants from the nation's three granting councils, McGeer argued. "This is the problem that needs to be solved if you want to get past this business of 20 000 new cases a day."

Had Alzheimer disease been targeted with as much funding as was polio, it would be as rare today, McGeer asserted.

Instead, forms of dementia are threatening to cripple health care systems, William Thies, chief medical and science officer at the Alzheimer's Association in Chicago, Illinois, told delegates. He estimated there are 35 million cases of people with Alzheimer disease worldwide and that those numbers will triple in four decades. He also noted the US government now invests US$450 million annually for Alzheimer research, as compared with US$6 billion on cancer, US$4 billion on heart disease and US$3 billion on HIV.

There are no approved drugs to halt progression of the disease and as of 2008, there were 172 Alzheimer drug development failures, according to one study (McArthur RA, Borsini F, editors. *Animal and translational models for CNS drug discovery: neurologic disorders.* San Diego (CA): Academic Press; 2008: 93-157).

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McGeer also noted neuroscientists have been unsuccessful in their efforts to persuade the Canadian government to address the problem. "When we asked to speak with the Prime Minister, he let us know that he just didn't have time."

In another AAAS session, the trade-off between public safety and industrial innovation took centre stage as panelists deliberated whether strict regulations are needed to oversee the fortification of foods with vitamins and minerals, or the approval of functional foods and nutraceuticals.

Public safety should take priority but governments aren't sure how to achieve consensus, said Gerald Moy, a consultant with Food Safety Consultants International. A history of food and drug tragedies has predisposed Europe to err on the side of caution, often at odds with American regulators. Canada is weaving its way through the "minefield," he said, later quipping: "Why did the Canadian chicken cross the road? To get to the middle."

Lekh Raj Juneja, executive vice president of Taiyo Kagaku Co., Ltd. of Japan, countered that food manufacturers are hampered by ill-defined criteria and timelines for regulatory approval of innovative foods.

Even the definition of what constitutes a functional food or nutraceutical remains at issue, the panelists indicated. The international Codex Alimentarius Commission is now trying to find common ground and a new risk assessment paradigm will need to be developed, Moy indicated. "No two claims are created equal."

Canada has been very active in seeking to give food manufacturers the green light to add vitamins and minerals to foods at their discretion within the parameters of food standards and guidelines established by the commission (www.cmaj.ca/lookup/doi/10.1503/cmaj.109-3185).

In another session, officials at the Tri-University Meson Facility in Vancouver sketched their efforts to produce technetium-99 from a molybdenum isotope using a medical cyclotron. The group fired protons at an isotope known as Mo-100, ejecting two neutrons and creating technetium-99. Given that medical cyclotrons can often be found in hospitals in most of Canada's major cities, it's ultimately hoped that the method will yield enough diagnostic isotopes to meet Canadian demand. — Sabrina Doyle, Vancouver, BC

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