



# GERONTO-McGILL

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## Canadians Take a New Approach to Treating Alzheimer's Disease

by Hannah Hoag

Alzheimer's disease (AD) is a neurodegenerative disease diagnosed in the elderly. As the disease progresses, these people gradually lose the ability to learn, to remember and to judge. What leads to the dementia that these people develop?

The brains of people with AD are scattered with amyloid plaques. These plaques disrupt the brain's normal tissue organization and cause neuronal cell death. Often, the cholinergic neurons, which release the neurotransmitter acetylcholine, suffer the most and memory functions decline.

Most AD drugs cannot prevent the formation of the amyloid plaques in the brains of patients with AD. Instead, they seek to relieve the symptoms associated with mild to moderate forms of AD by mimicking the function of acetylcholine, or reducing its rate of degradation. Currently, there is only one approved AD drug in Canada; five others are in some stage of development or clinical trial. None of them can cure the disease, nor can they help those with advanced AD.

Robert Kisilevsky, Donald Weaver,

*(Continued on page 2)*

## Alzheimer's Disease: Developing Tools for Early Diagnosis

The research of Dr. Howard Chertkow, Director of the Bloomfield Centre for Studies in Aging, Lady Davis Institute of the Jewish General Hospital, and Associate Professor, Department of Neurology and Neurosurgery, McGill University by Farzad Saberi

Dr. Chertkow is the newly appointed director of the Bloomfield Centre for Studies in Aging at the Lady Davis Institute of the Jewish General Hospital in Montreal. For the past 10 years he has been a founder and co-director of the JGH/McGill Memory Clinic.

Why is the creation of Memory Clinics necessary in the present era of budget constraints in the health care system? The prevalence of memory deficit in the general population has become significant enough that the existence of a specialised clinic such as the Memory Clinic at the Jewish General Hospital has become warranted. It is estimated that 10% of the population over the age of 65 suffer from some form of dementia with



the prevalence rising to 20-40% in the elderly over 80 years old. Dementia (with Alzheimer's disease being the most common form) is defined as "significant impairment in

*(Continued on page 2)*

## Public Lecture Series Elderly and gambling: a relationship fraught with dangers by Alison J. McTavish

The McGill Centre for Studies in Aging's most recent public lecture at the Delta Montreal Hotel featured Dr. Rina Gupta speaking about gambling in the elderly. Dr. Gupta, an Associate Professor of Applied Child Psychology at McGill University, began her talk by saying that many seniors believe they are too old to be compulsive gamblers. But as Dr. Gupta quickly pointed out, compulsive gambling is an equal opportunity

addiction.

Gambling research at McGill is relatively new, beginning only 8 years ago. Dr. Gupta's initial interest lay in gambling in children and adolescents. However, she soon realised that gambling among the elderly was on the rise, but little studied. While the prevalence of gambling among seniors isn't yet clear, middle-aged and older women are the fastest growing group presenting in treatment

*(Continued on page 3)*

### IN THIS ISSUE

NEW APPROACH TO ALZHEIMER'S	1
DIAGNOSTIC TOOLS FOR AD	1
ELDERLY AND GAMBLING	1
THE TOLL OF CAREGIVING	4
FRUIT FLIES AND PARKINSON'S	4
NATURAL HEALTH PRODUCTS	5
AGING-RELATED WEBSITES	6

## Canadians Take a New Approach to Treating Alzheimer's Disease

(Continued from page 1)

Walter Szarek, and Paul Fraser hope to change the way AD patients are treated. These men are the founders of Neurochem, and they believe that their drug can cure AD. Using their combined expertise<sup>1</sup>, they have designed Alzhemed™, a drug intended to prevent the formation of amyloid plaques, rather than treat the symptoms.

The pathological process of amyloid plaque formation depends on the interaction of fibrillar proteins and a type of negatively charged heteropolysaccharide (a glycosaminoglycan, or GAG) called heparan sulfate (HS). Alzhemed™ is a novel organic molecule that mimics the structure of the sulfated GAGs (such as HS) that are central to AD pathogenesis. By competing with the sulfated GAGs for the amyloid precursor protein, Alzhemed™ reduces neuronal cell death and the toxic consequences of amyloid plaque formation.

Theoretically, Alzhemed™ should stop the progression of AD, not just relieve the patient's symptoms. As of March 1999, all the toxicological and pharmacokinetic studies for Alzhemed™ were complete and the drug had advanced to Phase I clinical trials. However, until the results of phase II or III clinical trials have been published, Canadians with AD must rely on drugs that reduce their symptoms without preventing AD.

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*Brain and Neck Disorders: Dementia*, In: Berkow R, Beers MH, and Fletcher AJ, eds, *The Merck Manual of Medical Information: Home Edition*. Pocket Books; Toronto. 1999: 398 - 402.

<sup>1</sup> R. Kisilevsky (MD, PhD; Queen's University) is an internationally renowned researcher in amyloid biology; D. Weaver (MD, PhD; Queen's University) has received numerous awards for his work in medicinal chemistry and computer-aided drug design; W. Szarek (PhD; Queen's University) is an award-winning carbohydrate chemist; and P. Fraser (PhD; University of Toronto) focuses his neurobiological and biophysical research to understanding AD.

## Alzheimer's Disease: Developing Tools for Early Diagnosis

(Continued from page 1)

two or more cognitive domains such as memory, language or personality changes - severe enough to interfere with daily functioning". Dementia is a slowly progressive disease with variable presentation. Methods necessary for early and accurate detection of this condition can be of great benefit to both the patient and treating physician. Patients, by knowing their diagnosis, can arrange their future plans early, while still in good mental condition and fair judgement. Clinicians can also be sure about their diagnosis and treat patients in a more effective manner. This is an interdisciplinary approach including physicians, nurses, and neuropsychologists. Dr. Chertkow points out that the goals of the memory clinic are: "accurate early diagnosis and treatment of dementia, development of an interdisciplinary research program into Alzheimer's disease, and providing a teaching environment for the students of this discipline".

It is with these goals in mind that Dr. Chertkow is pursuing his research and clinical work as a staff neurologist at the Jewish General Hospital and active researcher at the Lady Davis Institute. He completed his medical school at University of Western Ontario Medical School and carried out his neurology residency training at McGill. He then pursued a three-year post-doctoral training at the Montreal Neurological Institute in Neurolinguistics and Behavioral Neurology. Presently, Dr. Chertkow holds an associate professor appointment in the department of Neurology and Neurosurgery, and the McGill Centre for Studies in Aging.

At the Memory Clinic, he sees mostly elderly patients who are sent most often by their family doctor for the assessment of memory disorders. Dr. Chertkow points out that "age is the most important factor in the decline of our memory capacity" and that "age-consistent memory change is something that most of us will have to live with".

However, there is a fraction of the elderly (10-20%) who exhibit a more significant memory decline, and they suffer from what is called "age-associated cognitive decline or mild cognitive impairment". These individuals can still function independently quite well. Many, but not all of these individuals will progress into a more severe illness, namely Alzheimer's disease (AD). One of the major goals of Dr. Chertkow and his colleagues in the field of cognitive neurology is to identify patients with mild cognitive impairment who are likely to progress to AD, and develop the means to arrest the progression to dementia. Early diagnosis remains the key in Dr. Chertkow's opinion. Within the past few years at the Memory Clinic, Dr. Chertkow and his colleagues have tried to develop specific tests for early diagnosis, and for the recognition of patient with mild cognitive impairment who would progress into frank dementia.

Through this research, patients with mild cognitive impairments receive a battery of age- and education-standardised neuropsychological tests. After a follow-up of around three years, they noted that although these patients had a higher rate of progression, on average 50% remained stable with mild impairment. It appears that a group of tests, rather than one test alone, are necessary to predict which patients will progress. Dr. Chertkow relates these results to the heterogeneity of dementia and Alzheimer's disease at all levels - genetic, pathological, and neuropsychological - that may preclude the complete diagnostic success of any one marker.

A critical benefit for the recognition of early dementia is to try new treatments that are currently being tested to alleviate symptoms and slow down the progression. A set of theories have been proposed regarding the development of Alzheimer's disease and the different treatment modalities that might

(Continued on page 3)

## Alzheimer's Disease:

*(Continued from page 2)*

counteract these processes. Cholinesterase inhibitors (which act to increase brain acetylcholine) such as Aricept (donepezil) and Exelon (rivastigmine) are now available for symptomatic treatment of AD. It is possible that they also will be shown in the future to slow progression of the disease. Vitamin E and selegiline (a neurotransmitter degradation inhibitor) are presumed to work via their antioxidant properties. Anti-inflammatory medications may slow AD via a reduction in associated inflammation within the brain. Estrogens and nerve growth factors are thought to reduce neuronal cell death. Many clinical trials are underway to test these different medications. Dr. Chertkow warns the readers that "none of these theories and treatments are yet definite and curative". The recent Canadian Consensus Conference on Diagnosis of Dementia, held here in Montreal, did not advocate treatment of patients with any of these modalities (other than symptomatic treatment with cholinesterase inhibitors). All of these approaches, while promising, are still at the experimental level.

Dr. Chertkow points out that this is an exciting era in the field of cognitive neurology - "for the first time, we have hope for new treatments, and possibly a cure for this disease". Alzheimer's disease has dramatic impact for the patient and their families. A better understanding of this illness could be of great value for the society in general.

## Elderly and gambling: a relationship fraught with dangers

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programs in casino cities.

According to a recent study, gambling is the most frequently identified social activity among people aged 65 and over in the United States. The appeal of gambling is readily apparent. It's exciting, it gives people a chance to dream and because people often lose track of time while gambling it can be a good way to escape from painful emotional or physical states. In fact, said Dr. Gupta, gambling is often a form of self-medication for the clinically depressed, delivering some temporary relief from feelings of isolation and boredom.

Depression is associated with problem gambling in people of all ages. Anxiety and depression are particularly common among older adults. In addition, some reports indicate that up to 50% of ill seniors and 70% of those in nursing homes have full-blown clinical depression. This makes the elderly population at high risk for developing gambling problems. Not surprisingly, seniors who gamble compulsively often report feelings of depression and lower overall life satisfaction.

Another contributing factor is the easy accessibility to gambling venues. Many retirement homes and religious groups offer gambling activities such as bingo and cards, and casinos offer free bus services. In Quebec, video lottery machines can be found in numerous shops and restaurants, and lottery tickets are available everywhere. Even playing the stock market is simpler than ever before.

Of course, the majority of seniors who gamble for entertainment don't develop a problem, but among those who do the effects can be devastating. Often seniors don't have a great deal of money, and compulsive gambling can lead to a decline in living standards, and the loss of homes and life savings. Since seniors often have no way of replacing lost money, families can end up paying off the debt.

What can family members do to help? It's important to understand the motivation behind the gambling, says Dr. Gupta. Get the

opinion of a physician. If there is a medical or emotional problem, appropriate medication may be helpful. Families should also be a source of emotional and practical support without facilitating further gambling.

Although many seniors are reluctant to seek outside help, Dr. Gupta assured the audience that treatment is available in the community. Self-help groups such as Gamblers Anonymous, for example, can be very effective. Individual psychotherapy and inpatient programs are also available. Self-recovery is an option, but may be very difficult.

During a lively question period Dr. Gupta pointed out that gambling may well become a more serious problem simply because of its pervasiveness in our society. Although many older adults grew up with the idea that gambling was a vice, it's now seen as mainstream entertainment.

### **Dr. Rina Gupta**

is an Associate Professor  
of Applied Child Psychology  
at the Faculty of Education  
of McGill University.

## HOT TOPICS IN AGING RESEARCH

### Fruit Flies With Parkinson's Disease

by Alison J. McTavish

Researchers have successfully used fruit flies to create a new model of Parkinson's disease. The fruit flies develop all the signs of Parkinson's disease typically seen in humans: fibrous protein deposits (Lewy bodies) in their brains, loss of dopaminergic neurons and the development of motor deficits. Researchers achieved this by expressing a human protein, alpha-synuclein, in the flies' brains.

Alpha-synuclein is a phosphorylated protein normally found in presynaptic neurons and is the main component of Lewy bodies. By studying families in which Parkinson's disease was inherited, two critical mutations in the alpha-synuclein gene were identified. It was thought that the mutated gene encoding the protein might enhance the formation of Lewy bodies and could be a key to understanding Parkinson's disease.

Researchers introduced both normal and mutant versions of the human alpha-synuclein gene into fruit flies and then looked for signs of Parkinson's. Among the first things they observed was a loss of dopaminergic neurons in the brains of adult flies and the development of Lewy bodies. The motor responses of the flies were tested using the insects' climbing ability. Normally when flies are tapped to the bottom of a vial, they quickly climb back to the top where they remain. Young flies overexpressing alpha-synuclein performed the task well, but older, transgenic flies often fell back to the bottom of the vial showing diminished motor response.

Mutant flies are particularly powerful disease models because in addition to their replication of the pathology and symptoms of Parkinson's disease, they have a very short lifespan. Theories about the role of Lewy bodies in Parkinson's disease can be investigated and a variety of new drugs and other therapies can be tested quickly.

(Continued on page 5)

## Caregiving Can Take Its Toll

by Jeff Boyczuk

A considerable amount of research over the past two decades has been directed towards examining stress levels in caregivers for the elderly or impaired. While several studies have revealed a link between the burden placed on caregivers and vulnerability to psychological effects, such as depression, evidence of a negative impact of caregiving burden on physical health has been ambiguous. A recent study by Susan Hughes from the University of Illinois and her colleagues has attempted to address this unresolved issue by examining the relationship between the burden placed on caregivers and their self-perceived health and well-being<sup>1</sup>.

Analyzing data from a cross-sectional sample of 1,570 caregivers for veterans, Hughes et al. developed a model in which health-related quality of life (HRQOL) was predicted by caregiver burden. Aspects of the HRQOL include vitality, social functioning, bodily pain, and self-perceptions about general health. Caregiver burden, which is comprised of both subjective and objective components, is determined by considering characteristics of both the caregiver and the care recipient. Caregiver characteristics that have been shown to have an impact on burden include age, sex, educational background, personal relationship to the care recipient, and whether the caregiver resides with the care recipient or not. Care recipient characteristics include age and diagnosis, mental status, and the level of functionality the recipient has in carrying out the normal activities of daily living.

Results showed that poor HRQOL scores were associated with a greater degree of objective burden, which was largely determined by spousal relationship, and income of the caregiver. Specifically, spousal caregivers, and those who had smaller incomes, generally had lower scores on the HRQOL scale.

Notably, subjective burden -- the caregiver's feelings and attitudes towards the caregiving situation -- had much less of an impact on HRQOL than objective burden. Objective burden is determined by assessing such things as the caregiver's personal time away from the care recipient, the caregiver's health status, vacation time, income level, and other tangible aspects of the caregiving relationship.

While Hughes et al. note that a causal relationship cannot be established from this cross-sectional analysis, their data do suggest that further research is warranted in examining the relationship between caregiver burden and physical health. The fact that increased objective burden resulted in poorer HRQOL scores also stresses the need for direct assistance with caregiving, perhaps through changes in public policy and more government-sponsored assistance programs. Such a need is only likely to grow in the coming decades as the proportion of elderly persons in the North American population steadily increases.

<sup>1</sup>Hughes, S., Giobbie-Hurder, A., Weaver, F., Kubal, J., Henderson, W. (1999). Relationship between caregiver burden and health-related quality of life. *The Gerontologist*, 39, 534-545.

## HOT TOPICS IN AGING RESEARCH

(Continued from page 4)

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## POLICY AND POLITICS

### The New "Office of Natural Health Products"

by Jeff Boyczuk

If you haven't checked out the "supplements" aisle in your local pharmacy lately, you may be surprised at what you find. In the last five years, the Canadian natural health products (NHPs) industry has taken off, and there is now a mind-boggling array of herbal preparations stocking the shelves, alongside traditional vitamin and mineral tablets. This increase in product selection has been a direct result of growing consumer interest in "natural" alternatives to treating everything from common cold symptoms to mental fatigue. It is now estimated that more than 50% of Canadians consume NHPs in one form or another.

The promises of NHPs, and in particular herbal remedies, may be appealing to elderly consumers. This is because many of the conditions or afflictions that these products claim to alleviate are ones to which the elderly are particularly vulnerable. For example, one of the hottest products on the market right now, Kava, has been promoted as a tonic for anxiety and sleeplessness. St. John's Wort, another herbal remedy that has received a lot of press recently, is reputed to provide relief from moderate depression and nervousness. There has certainly been a lot of hype surrounding these products, but do they really live up to their impressive claims?

Thankfully, this question and others surrounding natural health products may be answered in the coming months with the opening of the new Office for Natural Health Products (ONHP). The office was born out of a set of recommendations from a standing committee convened by Health Canada in 1997, to address the growing use of NHPs. The regulation of natural health products is currently handled under the Therapeutic Products Programme and guided by the *Food and Drugs Act*. When the ONHP becomes functional at the end of this year, it will be the primary regulatory authority for NHPs, reporting directly to the Assistant Deputy Minister of the Health Protection Branch.

The establishment of the ONHP has been spearheaded by an executive committee whose membership includes representatives from both industry and the public sector. The recently named executive director of the office is Phillip Waddington, a doctor of Naturopathy, and a former resident of the

Canadian College of Naturopathic Medicine. The Office is committed to consultation with public and external groups as it proceeds with the development of product regulations.

Perhaps the most vital role of the ONHP will be the stimulation of new research. Health Minister Allan Rock has pledged \$3 million over the next three years for natural products research, focusing on issues of safety and claims of effectiveness. Several subcommittees are now working to develop a set of guidelines in establishing standards of what constitutes "evidence" of a product's efficacy. Regulations regarding safe manufacturing, site licenses, and supplement labeling are also being developed.

In its role as a regulator and educator, the ONHP will be particularly beneficial for senior citizens who consume natural health products. One of the proposed research directions of the Office involves the investigation of interactions between herbal products and conventional medications. This information would be particularly useful for the elderly who, as a group, tend to consume more medications than other age groups. Furthermore, research establishing the effectiveness of herbal supplements is especially important to senior citizens, who are often on tight budgets. A casual check at the local pharmacy reveals that a 60-capsule (150 mg) bottle of Kava sells for between \$15 and \$20; Echinacea, a supplement for the relief of sore throats, sells for between \$18 and \$23 for a 60-capsule (1050 mg) bottle. Clearly, herbal products do not come cheap.

With its opening in the winter of 2000, the ONHP will be a big step in the right direction towards allowing seniors, and all Canadian consumers, to make informed decisions about natural health products.

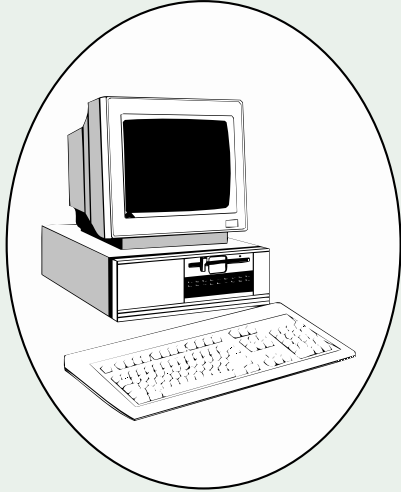
*More information on the Office of Natural Health Products can be obtained at the following Health Canada web site:*

[http://www.hcsc.gc.ca/hpb/onhp/welcome\\_e.html](http://www.hcsc.gc.ca/hpb/onhp/welcome_e.html)  
(English)

[http://www.hcsc.gc.ca/hpb/onhp/welcome\\_f.html](http://www.hcsc.gc.ca/hpb/onhp/welcome_f.html)  
(French)

# REGISTRY OF AGING-RELATED WEBSITES

by Hanna Hoag



## [www.arclag.org](http://www.arclag.org)

The Aging Research Centre (ARC) is research focused, but includes the general public in its audience. The content appears to be updated on a weekly basis, and it is extensive (items of major interest; journals; audio-visual documentaries; meetings; recent books and recent aging related articles).

## [www.ncoa.org](http://www.ncoa.org)

Users of virtually any background/interest would benefit from the website of the National Council on Aging. News releases dominate the sight; their headlines are well presented as internal links to the full story. Links to grants alerts and American public policy updates are also provided.

## [www.alzheimers.org](http://www.alzheimers.org)

The Alzheimer's Disease Education and Referral (ADEAR) centre website provides users (presumably the informed general public and clinicians) with links to recent research on Alzheimer's disease, archived publications, events and clinical trials. Users can contact information specialists with specific questions concerning Alzheimer's disease.

## [www.HealthandAge.com](http://www.HealthandAge.com)

The HealthandAge (written as one word) website is an information service provided by the Novartis foundation for Gerontology. The site is well organized into 3 gateways: for the physician, for the general public, and for other health care professionals. Each gateway provides links to a free newsletter, a learning centre, monthly highlights, a resource centre. The aging topics covered are diverse and timely: Alzheimer's disease, cardiovascular disease, depression, diabetes, and mobility.

## [www.hc-sc.gc.ca/seniors-aines/seniors/english/new.htm](http://www.hc-sc.gc.ca/seniors-aines/seniors/english/new.htm)

Seniors Guide to Federal Programs and Services - Year 2000 Edition

Information about health and safety matters, consumer products, legal matters, housing, transportation, employment, financial and retirement planning, nutrition, travel and recreation opportunities, volunteer and cultural activities. Free copy now available in HTML, PDF and WPD formats.

## [www.aoa.dhhs.gov/aoa/pages/jpostlst.html](http://www.aoa.dhhs.gov/aoa/pages/jpostlst.html)

Internet and E-Mail Resources on Aging. The first and one of the most comprehensive list of internet access sites on aging compiled by Joyce Post, the reference librarian at the Philadelphia Geriatric Center and a frequent contributor to E-Mail discussion groups.

*These websites are presented as a reference tool for readers. Geronto-McGill does not guarantee the accuracy of information found at these sites, nor endorse any of the products found therein.*