



The studentship program will take from 80% to 100% of a student's time for up to 2 years of clinical research, during which the study of pain

management and breathlessness will be high priorities. The grants program aims to use evidence-based research on medications used to treat

these symptoms to develop equitable, cost-effective access to drugs across the country. Faculty scholarships lasting up to 2 years will be open to a wide range of education professionals.

The CPCI will be administered at arm's length from government by the newly created Palliative Care Foundation of Canada. It will cost \$19.5 million over 5 years, with \$9.75 million coming from Health Canada and the balance from the drug industry, other private sources and fund-raising. — © Heather Kent

What does it cost to live with HIV?

The annual British Columbia HIV/AIDS conference marked its 10th birthday this fall, and the anniversary arrived at a critical time because BC now claims one of the highest incidence rates for HIV infection in the developed world.

A unique Canadian project discussed at the 1997 conference has been investigating the cost and economic impact of HIV and AIDS. The goal of the Community Health Resource Project is to define direct and indirect costs associated with HIV/AIDS and, conversely, to explore the economic value of life. The project evolved after discussions with community groups to determine where gaps existed in current cost-related research. "What is missing most notably in other studies is the cost to partners, volunteers and community agencies," said Dr. Robin Hanvelt of UBC, the study's principal investigator.

Current direct-cost estimates per lifetime episode of AIDS are as high as \$180 000, whereas indirect costs representing lost income because of death and debilitation may reach almost \$1 million per case.

This is the only Canadian study to specify the cost of retroviral therapy (57% of participants are taking drug combinations that cost about \$12 000 per year, and protease inhibitors cost close to \$6000 annually). It also includes a wide range of costs, including the price

tag attached to volunteer support, and contains a large sample from "emerging groups" affected by the disease, such as women and natives.

A functional health-status component, which describes people's perception of their health, is considered a crucial component. As well, participants are asked to record in a diary unmet needs involving basic items such as food and clothing.

Evin Jones of the BC Persons with AIDS Society said patients' dependence on welfare benefits is her agency's "central dilemma." Affordable housing is needed, because even though average rent in downtown Vancouver is \$740 per

month, the maximum shelter allowance for those receiving welfare is \$325 a month. This forces many people to live in decrepit hotels. The requirement that Canada Pension Plan disability benefits be deducted from welfare cheques also causes financial problems, said Jones.

The research project, launched in September 1996, now has 550 participants; 175 are natives, and native leaders play an active role in the project. Data are currently being analysed and results will be disseminated widely in the AIDS community. Hanvelt and his coinvestigator, UBC economist David Schneider, "hope the data will be used in ways that we never anticipated." — © Heather Kent



WHO condemns broad use of antibiotics on farms

Humans are in danger because of the growing use of antimicrobial drugs in raising farm animals, the World Health Organization (WHO) says. Following an October meeting, WHO reported that public health consequences of excessive use of antimicrobial products in livestock include the emergence of resistant microbes, which can be transferred to humans through the food chain. Researchers attending the meeting received evidence that antibiotic use in animals leads to resistant salmonella infections.

Manitoba MDs say *Nein* to German physicians

Manitoba's health minister never dreamed that his plan to hire German doctors to work in remote parts of the province would degenerate into an acrimonious debate between the government's official opposition, the College of Physicians and Surgeons of Manitoba and the Association of Foreign Medical Graduates of Manitoba Inc.

During a recent trip to Germany, Health Minister Darren Praznik scoured the country for 40 replacement doctors to serve in areas with chronic physician shortages. However, his initiative caused a storm of



protest when he returned home to announce his intentions. College Registrar Ken Brown said the idea held little merit. "I question how Mr. Praznik plans to fast-track new foreign recruits into the system," he said.

Dr. Diane Biehl, associate dean of postgraduate medical education at the University of Manitoba, said it would be difficult to assess the quality of the German graduates because of the number of East German physi-

cians trained before unification. "There is also the language barrier to consider," she added. "If we want to guarantee excellence and solve the physician shortage, we should be graduating more Canadian physicians from Canadian schools."

Participants at a meeting attended by representatives from the college and medical school agreed that a handful of foreign-trained doctors could see patients. "This would allow

us to assess their skills," Brown said. However, New Democrat health critic Dave Chomiak, backed by foreign medical graduates, said the proposal is unfair to 20 foreign-trained physicians who have passed parts 1 and 2 of their qualifying exams and are willing to work anywhere in Manitoba. He also wants the government to pay the cost of training a further 30 foreign-trained physicians living in Manitoba if they agree to work in re-

Focus changing at children's hospitals

Dozens of hospitals have closed across Canada in the past 5 years, but the country's children's hospitals appear to have survived the cuts. Alberta, Ontario, British Columbia and Nova Scotia have all opted to keep their children's hospitals open, and Newfoundland is about to lay the foundation for a new facility.

However, speakers at a recent conference of the Canadian Association of Paediatric Hospitals (CAPH) said that in the future these hospitals will differ from today's stand-alone facilities. Indeed, many of them are already transforming themselves into facilities for children *and* mothers. This merger of services increases an institution's pool of patients and can have a significant impact on quality of care. Montreal's Hôpital Ste-Justine, which pioneered this concept in Canada in 1970, now treats one-third of all problems involving neonatal patients in Quebec. The hospital handled 1626 deliveries in 1972, but by 1996 it was dealing with 4056 births, of which 15% were premature by at least 4 weeks.

Similar maternal- and child-health facilities have been established at the IWK Grace Health Centre in Halifax and the BC Women's and Children's Hospital in Vancouver. In Ontario, both the

Hospital for Sick Children (HSC) in Toronto and Ottawa's Children's Hospital of Eastern Ontario (CHEO) are taking a different tack. Both have established "networks" to integrate the clinical services they offer into additional services for children.

HSC has taken a strictly clinical, top-down approach: it is promoting itself as the "hub" for pediatric medicine and developing satellite expertise in particular conditions in other Toronto-area hospitals. Meanwhile, CHEO has taken a community-focused, bottom-up approach.

Changes within the sector have given CAPH a renewed sense of momentum and will probably lead to a name change to reflect the move away from bricks-and-mortar definitions of health care.

Restructuring is leaving some scars. Mergers between hospitals for children and women have disrupted old loyalties and involved huge amounts of paperwork and reorganization. Neonatologist Eli Rees said the Halifax merger needed 25 subcommittees to handle the change within his department alone, and the merger is still incomplete. "A true feeling of unity is still to come," he says.

Participants agreed that it is hard



to gauge whether the new approaches are successful, since few reliable measures of outcome are available. No evidence suggests major financial savings, and reorganization triggers many challenges. For instance, how should the free flow of information be handled among multiple caregivers? How far can health care networks evolve within the present system of physician remuneration?

Still, it seems most Canadians remain satisfied with the health care provided for their children. This is true even in Alberta, where a radical restructuring has included major spending cuts. — © Charlotte Gray (CMAJ contributing editor and vice-chair, CHEO Board of Directors)



mote areas after graduation. "They would sign a contract stipulating that they would practise for 5 to 10 years in rural Manitoba," Chomiak said. The college in turn proposed that the foreign-trained doctors be eligible to work as physician assistants in remote areas so that their verbal, medical and other skills could be assessed.

Meanwhile, the shortage grows worse, with all 3 physicians recently leaving the small town of Deloraine. Dr. David Lindley said he is moving to a medical centre in Nebraska where he can practise his surgical skills. "There is no anesthetist in De-

loraine, even though we have been trying to recruit one for years, and if I remain here another year my surgical skills will have to be reassessed." Grant Cassils, president of the Deloraine Chamber of Commerce, is considering sending a delegation to the United Kingdom to search for replacements.

Meanwhile, Praznik said he has not given up on his plan to recruit Germans. The government can grant a ministerial waiver that places doctors on a conditional register that allows them to work immediately. — © David Square

Teens charged with Ritalin trafficking

The RCMP have charged 5 Manitoba teens with trafficking in methylphenidate, which is normally prescribed to treat attention deficit hyperactive disorder. The youths, aged 13 to 15, live in Boissevain, which is south of Brandon near the US border. Police confirmed that 2 of those charged had legal prescriptions for the drug. The police became involved after parents, concerned about missing tablets, contacted police.

Research Update • Le point sur la recherche

The enteropathogen has landed

A recent Canadian discovery concerning the virulence of enteropathogenic *Escherichia coli* is an unprecedented finding in microbiology.



Photomicrograph of *E. coli* bacteria (each about 1 micron in diameter) attaching to the epithelial cells of the intestinal wall

Researchers at the University of British Columbia biotechnology laboratory have found that enteropathogenic *E. coli* injects its own receptor molecule into the intestinal cell wall for the bacterium to attach itself to (*Cell* 1997;91:511-20). This is a completely new concept in biochemistry, says Dr. Brett Finlay, one of the study's authors.

Conventional wisdom assumes that microbes lock onto existing host molecules. A year ago Finlay and his colleagues knew that the bacteria bound to the intestine but did not know precisely how. In fact, they inject a soluble protein into the host membrane, preparing a landing field for the bacteria themselves.

After the bacteria pass through the stomach they shoot the receptor into the intestinal membrane, using numerous accessory proteins to ensure that it docks suc-

cessfully. The bacteria then attach themselves firmly to these receptors.

To verify this sophisticated sequence of events, the researchers observed specially produced large protein receptors (fusion proteins) entering human cells. They then eliminated the bacterial gene — coding for the protein — and found that the bacteria could no longer bind to human intestinal cells.

This discovery allows researchers to target the bacterial molecule, rather than the host molecule, in their next phase of work. They will now begin shutting down the bacterial injection machinery in an effort to develop *E. coli* vaccines for beef cattle. The goal is to immunize cattle against the molecule so that they do not harbour *E. coli* and pass it to humans. Three Canadian companies are working on vaccines and developing compounds to block receptor delivery.

Although he acknowledges the hit-and-miss history of vaccines, Finlay hopes one is ready within 1 or 2 years. He speculates that other microbes, including the *Salmonella* and *Shigella* species, may use a similar mechanism to install receptor proteins in human cells. — © H. Kent