Sheep develops vCJD after receiving blood from another sheep

Is blood from people infected with variant Creutzfeldt–Jakob disease (vCJD, or bovine spongiform encephalopathy [BSE]) infectious? The final answer won't be known for several years, but a British study (*Lancet* 2000;356:955-9) provides "convincing evidence" that it may be. In this study, blood from a sheep that had been fed 5 g of BSE-affected cattle brain was transfused into another sheep. At the time, the sheep that provided the blood was symptom free. The sheep that received its blood subsequently began exhibiting clinical signs of and pathological changes associated with BSE. Before this, there was only "hypothetical" evidence that vCJD was transmissible via transfusions (*CMAJ* 1998;159[6]:669-70).

"Although this result was in only one animal, it indicates that BSE can be transmitted between individuals of the same species by whole-blood transfusion," the authors report. The finding came after blood services in Canada, the US and New Zealand had already moved to ban transfusions from people who spent more than 6 months in the UK in the 1980s and early '90s because of fears they might harbour the disease. Australia is now considering a similar move.

This initial result was released early because of fears of media leaks, but an accompanying editorial questioned the move: "Science should not be driven to what in certain medical quarters might be termed a premature emission through fear of media misrepresentation." The authors said the finding was "sufficiently important" to warrant the early report. — *Patrick Sullivan*, CMAJ

New food labels to reveal nutritional content

The nutrition labels that Health Canada has proposed for nearly all packaged foods mark a "major breakthrough," the Alliance for Food Label Reform says.

The 16-member alliance has been fighting for better labelling for more than 3 years. Use of the new, highly informative labels will likely become federal policy in 2001; manufacturers will then have 2 years to comply. The alliance is led by the Centre for Science in the Public Interest (Canada), a nonprofit consumer health organization.

"Only 50% to 60% of foods have any nutritional information," says CSPI spokesperson Bill Jeffery. Health Canada says that current nutrition labelling is fully voluntary, looks different on different foods, and "when it is present, it usually gives information on only a few nutrients."

Nutrition Facts
Serving Size 1 cup (200g)

Amount Per Serving	
Calories 260	
	% Daily Value
Fat 13g	**20%**
Saturated Fat 3g + Trans Fat 2g	**25%**
Cholesterol 30mg	**10%**
Sodium 660mg	**28%**
Carbohydrate 31g	**10%**
Fibre 0g	**0%**
Sugars 5g	
Protein 5g	
Vitamin A 4% •	Vitamin C 2%
Calcium 15% •	Iron 4%

New label was long time in the making

The proposed labels will help parents be more aware of nutritional content, says Jeffery. "It will be great to see the total sugar and calories listed on soft drinks. That will make people think twice." Health Canada estimates that costs related to unhealthy eating total more than $6.3 billion per year.

The proposed "Nutrition Facts" box will provide information on calories and the 13 nutrients considered most important to health: fat, saturated fat, transfat, cholesterol, sodium, carbohydrate, fibre, sugars, protein, vitamin A, vitamin C, calcium and iron.

Special rules apply to small packages, and exemptions will be given to small manufacturers. Jeffery says the key exemption involves foods packaged at the retail level, including meat, fish and baked goods: "It's a needless concession that has the potential to compromise the quality of the labelling effort." — *Barbara Sibbald*, CMAJ

Prairie paramedics test new weapon against MIs

Paramedics in Saskatchewan and Alberta will soon be administering the clot-busting drug tenecteplase (TNK) to heart attack patients in the field. The move is part of a 1-year clinical trial. The trial, involving paramedics in Edmonton, 2 Alberta counties and Saskatoon, will assess whether patients who receive thrombolytic drugs before arriving at hospital have better outcomes. Paramedics will connect suspected heart attack patients to a 12-lead ECG and transmit the results to participating hospitals. Physicians staffing a 24-hour hotline will deliver the diagnosis and may give a verbal order to inject TNK at once. "When it comes to heart attacks, time is muscle," said Tim Hillier, director of education for Saskatoon's MD Ambulance. "The shorter the time from onset of pain to receipt of these drugs, the less damage is done, which in turn improves a patient's chances of recovery. Within the city we should be able to save 10 to 15 minutes."

Studies have shown that TNK is as effective as tissue plasminogen activator (tPA) but is easier to administer. It requires a single injection rather than tPA's 90-minute, 3-bolus infusion. Patients will also receive 1 of 2 different anticoagulant drugs as part of the trial, which began this fall. — *Greg Basky*, Saskatoon

Saskatoon doctors make a house call to MARS

Saskatoon was the lone Canadian site and 1 of only 4 worldwide that took part in a recent mock medical emergency designed to test the limits of long-distance medicine.

Doctors at Saskatoon District Health joined colleagues from Virginia Commonwealth University (Richmond, Va.), Yale University (New Haven, Conn.), and a hospital in Moscow in diagnosing — via the Internet — an injured "astronaut" at the Mars Arctic Research Station (MARS) on Devon Island, Nunavut Territory. The island is being used to simulate the Martian landscape. The Aug. 2 test was staged by the National Aeronautics and Space Administration (NASA) and the MARS Project.

Participating physicians viewed the patient's medical data and vital signs on their computers and then conferred online and used special video teleconferencing technology to arrive at a diagnosis. Patient information, as well as the providers' agreed-upon treatment plan, were subsequently sent back to the attending physician on Devon Island — with a 22-minute delay designed to simulate the transmission time between Earth and Mars. A manned mission to Mars is currently in the early-planning stage.

Marc Boucher, NASA

Nathaniel Marion of NASA wears the Xybernaut computer used to send patient information and vital signs to 5 sites participating in telehealth pilot project.

"It was an excellent opportunity for our district, both in terms of the research itself but also to be a part of an international initiative such as this," said Karen Levesque, telehealth coordinator for Saskatoon District Health.

The district was selected for the trial because of its reputation as a Canadian leader in telehealth. The health district, which serves as tertiary care centre for the northern part of Saskatchewan, delivered more than 1600 2-way, real-time audiovisual presentations to health providers, patients, and the public in the north last year, as part of a pilot project called the Northern Telehealth Network. — *Greg Basky*, Saskatoon

Malpractice fees double for Ontario's ob/gyns

The Canadian Medical Protective Association warned last spring that some physicians in Ontario faced huge increases in their malpractice insurance fees (see *CMAJ* 2000;163[2]:201). It wasn't lying. When the CMPA set its 2001 fees late last month, Ontario obstetricians learned that their fees will double next year, rising from $31 404 to $60 372. Ontario's other surgical specialties also face significant increases, with fees for neurosurgeons rising from $27 900 to $42 264. (Taxpayers, not doctors, will cover the cost of the increase. OMA President Albert Schumacher notes that obstetricians will pay only their 1986 rate — $4900 — with the province paying the remaining $55 472.) The story is much different in other parts of the country. Quebec obstetricians now pay only $13 944 a year for their malpractice protection, while obstetricians in the rest of the country pay $27 348. The changes result from regional rating, the CMPA's attempt to link fees to the medicolegal climate in its 3 regions. Since Ontario courts are by far the most generous in awarding patients following medical misadventures, the province's doctors face the highest CMPA fees. More bad news is probably on the way in Ontario. The CMPA noted that this year's increases in the province were "tempered" because of credits applied by the association. When these disappear in 2004, "Ontario members may be faced with markedly higher fees."

On Nov. 1, CMPA spokesperson Françoise Parent said the association had not received any feedback. "No one has said this is great or this is not so great, but the billing package only went out to members this week. If we're going to hear, we'll hear after they get it." — *Patrick Sullivan*, CMAJ

Task force recommends screening females for abuse beginning at age 12

A task force in London, Ont., hopes to make screening for females who have been abused as much a part of the physician–patient relationship as taking a pulse or applying a blood-pressure cuff.

A 91-page report from the Task Force on the Health Effects of Woman Abuse (**www.healthunit.com/reports research.htm**), released in September, contains 29 recommendations for identifying and preventing such abuse. The task force members included physicians and representatives from London hospitals, community agencies, the University of Western Ontario and the judicial system.

"Screening works," says Dr. Graham Pollett, medical officer of health with the Middlesex–London Health Unit. "We do it for breast cancer, diabetes and high blood pressure, and we must begin doing it for woman abuse."

Because of the potential health impact of such screening, adds Pollett, "woman abuse is an area where a public health approach — that is, a community response — is long overdue."

A key recommendation is that females older than 12 be routinely screened by health care professionals for any form of physical, sexual or emotional abuse occurring in childhood, adolescence or adulthood. Family physicians in London will take part in a pilot project to test a routine protocol for universal screening.

"We're not asking health care professionals to fix this problem, because there is no quick fix," says task force Chairperson Marion Boyd, a former attorney general in Ontario. "We're asking them to play a pivotal role in the early identification and prevention of woman abuse."

Because of the time constraints that physicians face, referral to community agencies — considered the "specialists" in dealing with this type of abuse — is suggested. This, says Pollett, would mean that "the woman is connected to the support services she needs. What we ask is that physicians document and undertake the health care assessments so that doesn't get lost."

The task force organizers say London's excellent network of services, its reputation as a leader in research of woman abuse, along with its lobbying for criminalization of intimate partner abuse, makes the city the ideal setting for the pilot project.

"We think that as physicians do this, they will see the immediate benefits," says Boyd. "All those puzzling [symptoms] become clearer. The [physician–patient] relationship grows with this — it isn't destroyed by this."

The task force concluded that if physicians help to "break the silence very early," woman abuse can be treated before it becomes an emergency and results in injury or even death. — *Lynne Swanson*, London, Ont.

Alberta child abuse program swamped

Organizers of an Edmonton program for investigating alleged child abuse have seen 50% more children than predicted during the program's first year of operation. Of the 450 cases, more than half involved alleged sexual abuse and 236 cases involved children under age 5. Linda McConnan, coordinator of Capital Health's Child and Adolescent Protection Centre, says there was pent-up demand for this type of centre. It differs from a similar program in Winnipeg because it has a pediatric social worker on site.

Children are referred from child welfare agencies or local police. While the children play in a separate area, a history is taken from parents or caregivers. The children then choose someone to accompany them while they are physically examined by one of the centre's 2 physicians. The examination is videotaped and the second doctor reviews the findings. The team then meets the child's family to discuss the results, and a report is made to the referral source.

Pediatrician Lionel Dibden, who now devotes half his time to the program, says that many of the cases never reach the courtroom, but he has already testified a few times and has several subpoenas regarding further appearances sitting on his desk. Dibden is well aware of the need for physician witnesses to be neutral when making court appearances. "We are trying to provide the most accurate medical evidence that we can, and try not to be seen as an advocate. There sometimes are concerns that medical people are biased in favour of the child." — *Heather Kent*, Vancouver

Canada's MDs most pessimistic in 5-country survey

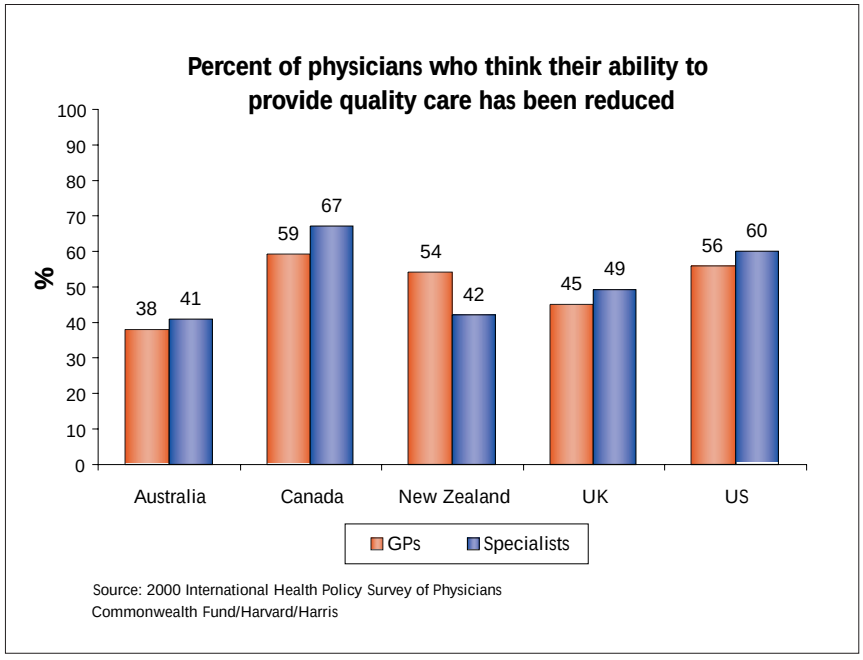
Canadian doctors are more pessimistic about the state of medicine than physicians in 4 other industrialized countries. The 2000 International Health Policy Survey of Physicians, conducted by the Harvard University School of Public Health and the Commonwealth Fund, found that Canadian physicians believe their ability to provide care has not only deteriorated in the past 5 years but also is bound to slide further.

Questionnaires were mailed to 2571 physicians in Canada, New Zealand, Australia, the UK and the US between May and July 2000 (**www.cmwf.org/**).

Canadian specialists (cardiologists, gastroenterologists and oncologists) were most pessimistic, reporting that their ability to provide quality care has deteriorated over the past 5 years (see chart). In Canada, 67% of specialists reported a decline in the quality of care, compared with 60% in the US, 49% in the UK, 42% in New Zealand and 41% in Australia.

Canadian physicians also appeared more worried about the future. Sixty-eight percent of Canadian specialists and 61% of FPs anticipated that the quality of care would decline. In comparison, 52% of specialists in the US, 45% in Australia and New Zealand, and 41% in the UK shared this concern.

Karen Davis, president of the Commonwealth Fund, a nonprofit research group, thinks Canadian physicians' dissatisfaction is linked to funding cuts. Between 1990 and 1998, US health care expenditures remained flat as a percentage of gross domestic product, while Canada's declined from 10.2% to 9.5%. "It takes a lot of squeezing to reduce health spending as a percentage of the GDP," says Davis. However, she adds that the September decision to inject more federal money into health care may alleviate problems such as the physician and RN shortage and the "equipment gap."



Overall, the survey revealed a strong consensus among the 5 countries that while their systems have some positive aspects, fundamental changes are required. That opinion was most strongly held by Canadian specialists, 84% of whom supported fundamental change (compared with 74% of their UK counterparts and 64% of US specialists).

"The systems are so different, but the same issues are on everyone's mind," says Davis. These include waiting times and equipment and medical staff shortages.

Canadian physicians are more worried than their international counterparts that their patients will wait longer than they should for medical treatment. Eighty-four percent of Canadian specialists and 74% of FPs worry about these waits, compared with 54% of American FPs and 52% of specialists.

More Canadian physicians, both FPs (63%) and specialists (76%), also reported a shortage of the latest medical and diagnostic equipment. In addition, nearly 3 times as many Canadian specialists (61%) as other specialists reported a shortage of FPs.

"All physicians are basically saying they could use more help," says Davis. Canadian FPs said the best way to improve quality of care is to provide better access to specialized medical care (77%), followed closely by better nursing or home-care follow-up after discharge (76%). Meanwhile, 80% of US physicians said better access to preventive care and patient education is most important (compared with 70% of Canadian FPs). The major point of consensus involved time spent with patients. More than 70% of all physicians (except those in New Zealand) agreed that spending more time with patients would improve care.

Robert Blendon, the survey author, describes the findings as "alarming." Blendon, a professor of health policy and political analysis at Harvard, adds: "What's worse is that many doctors in all five countries fear this decline in quality will continue.

"These doctors' concerns sound a wake-up call. The good news is that they don't view the situation as irreversible and offer concrete suggestions for improvement."

The survey involved roughly 500 physicians — 100 specialists and 400 FPs — from each country. The margin of error is ±4%. — *Barbara Sibbald*, CMAJ

Does religion speed recovery in mental illness?

Psychiatric patients who regularly attend church and pray recover more quickly than their nonreligious counterparts, a University of Saskatchewan study indicates. Results from the cross-sectional survey, which involved 88 clinically depressed inpatients from 2 Saskatoon hospitals, was presented during the annual meeting of the Canadian Psychiatric Association. It found that frequent church-goers had lower severity of depressive symptoms, shorter lengths of stay and higher satisfaction with life, and abused alcohol less than patients who didn't pray or attend church.

"I think the message is that perhaps we're not being as diligent as we should be in considering this need in our patients and the role that religion can help play in treating patients as a whole," said Dr. Marilyn Baetz, lead researcher and an assistant professor in the university's Department of Psychiatry. "In psychiatry, we've seen so many good new drugs introduced lately. Perhaps there is a tendency just to focus on that."

Baetz acknowledged that this type of research elicits scepticism among physicians, but added: "I've had doctors tell me that this confirms what they've believed all along, but that it's good to have the data." — *Greg Basky*, Saskatoon

Caution against ozone-depletion complacency

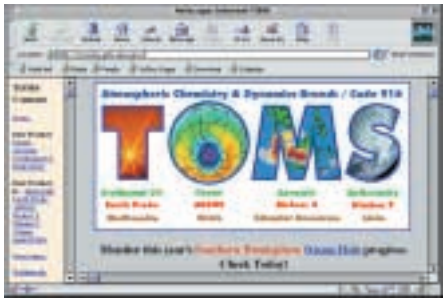
Many people think the problem of ozone depletion has been solved by more restrictive international agreements but "such complacency may prove fatal," an expert says.

The 15-member European Union agreed in October to set strict limits on ground-level ozone pollution, but Dr. Frank de Gruijl, a professor of dermatology from the Netherlands, says such agreements must be scrutinized and policed with the "utmost vigilance."

That doesn't appear to be happening. One of the major existing problems, says de Gruijl, is illegal trade involving large quantities of ozone-depleting substances. And while developed countries are curbing use of these substances, developing countries have no such safeguards. Sources of ozone depletion include the loss of chlorofluorocarbons from air conditioners, fire extinguishers, foaming and cleaning products, and fumigants used to kill nematodes.

In a recent article (*CMAJ* 2000;163:851-5) de Gruijl advised consumers in developed countries to "remain vigilant and not purchase anything operating or produced with ozone-depleting substances when good alternatives are available."

The spectre of ozone-depletion came to the fore this fall when 120 000 Chileans were warned to stay indoors during prime sunlight hours. De Gruijl says these warnings are "understandable" in the face of a sixfold increase in the chance of sunburn and the possibility of a temporary depression of cellular immune responses, which could make people more vulnerable to infections.



The ozone hole over the Antarctic is the largest since scientists began measuring it 15 years ago: the UN reported more than 50% depletion throughout most of the hole. NASA (**http://jwocky.gsfc.nasa.gov/**) reports that the hole has spread over 28.5 million square km, an area 3 times larger than the continental US. — *Barbara Sibbald*, CMAJ

Obesity a heavy burden in Nova Scotia

Nova Scotians are packing on the pounds and it is costing the health care system dearly, an economic-impact study commissioned by Cancer Care Nova Scotia indicates.

Between 1985 and 1997, the rate of obesity in Nova Scotia more than doubled for adults between the ages of 20 and 64. More than 37% of Nova Scotians now meet the medical definition of obesity, a figure 31% higher than the national average.

"To turn around the increase in obesity, we have to recognize that junk food, physical inactivity and rising stress rates are as toxic and costly as tobacco," said Dr. Ron Colman, lead researcher and director of GPI Atlantic, a nonprofit group developing a new economic index for Nova Scotia. Economically, he says, obesity is taking a toll: it costs the provincial government $120 million a year in direct health care costs, including $24 million for the treatment of hypertension, and $140 million in indirect costs, primarily lost productivity. An estimated 1000 Nova Scotians die each year as a result of obesity.

On average, the provincial government spends only 2% of its budget on disease prevention. Food manufacturers, on the other hand, spend billions advertising.

"In effect," says Colman, "our children are getting their education about diet from the food industry, and in particular the fast-food industry."

Recommendations in the report, *Costs of Obesity in Nova Scotia*, include requiring school cafeterias to serve more nutritious foods, putting high-fat warnings on junk food and taxing manufacturers of foods with little nutritional value. — *Donalee Moulton*, Halifax

On the Net

The medicine–literature connection moves online

New York University's Literature, Arts and Medicine Database (**endeavor.med.nyu.edu/lit-med/lit-med-db/topview.html**) began as a resource for medical educators, but today it also serves any reader in search of a good book. Its 41st edition features annotations for 53 artworks and 90 films, as well as 1461 literary works by 894 authors.

A free-text search for "Canada" finds 63 entries, including books by authors such as Jane Urquhart, Timothy Findley, Hugh MacLennan and Janet Turner Hospital, and films such as *Strangers in Good Company*.

The individual entry for Toronto author Donna McFarlane's 1994 *Division of Surgery* provides a brief summary and commentary about the work, as well as publication information and keywords. The commentaries are informative and accessible, and the indexing by keywords is one of the site's most useful features. *Division of Surgery*, a novel

about a young woman surviving serious inflammatory bowel disease, is indexed under keywords such as doctor–patient relationships, human worth, patient experience and power relationships.

Clicking on any one of these terms pulls up a list of related entries, allowing the user to search readily for works dealing with a particular theme. Certain entries are cross-linked to online texts or audio or visual presentations where the works are published, displayed, excerpted, read, performed or discussed.

Links from the Medical Humanities homepage (**http://endeavor.med.nyu.edu/lit-med**) lead to the Web site for the journal *Literature and Medicine* (**http://muse.jhu.edu/journals/literature_and_medicine**) and the Roster of Physician Writers (**http://members.aol.com/dbryantmd**). Newcastle University's Walton Library encourages students to broaden their reading by visiting **www.ncl.ac.uk/library/medical/medhums.html**, which is linked to, among other resources, its own compilation of literature about medicine. — *Alison Sinclair*, CMAJ

Rural BC physicians mediate in "poisonous atmosphere"

It was a summer of discontent in British Columbia's rural communities, as doctors withdrew all but life-and-death care in domino-like fashion. Now rural physicians in all communities are back on the job, hoping that mediation will alleviate their funding and quality-of-work-life woes.

A 3-person mediation panel, comprising 2 lawyers recommended by the British Columbia Medical Association and a government representative, is now gathering submissions. It was to report by mid-November. The parties then have until Nov. 30 to respond.

The mediators' findings are not binding, but Premier Ujjal Dosanjh has stated that if the panel finds the government's previous offer inadequate, it will be improved. BCMA President Marshall Dahl is optimistic. "Out of this should come a plan to keep enough doctors in these rural areas, that will treat people equitably but also [acknowledge] that some places are more remote and need better incentives."

Many doctors have fled rural BC, which has been plagued by chronic staff shortages. Patients are also on the move: Dahl says transfers to Alberta or Vancouver now "a fact of life."

Negotiations have been complicated by a unique political environment, said Dahl, referring to the NDP's 8 years in office. "It has been a fairly poisonous atmosphere, frankly, and it has taken a long time to bring things to resolution." In March the BCMA signed a 1-year agreement that provided more money for physicians. Doctors agreed to eliminate their reduced-activity days — the closure of offices 1 day a month — and the BCMA agreed not to condone any service withdrawals by MDs.

When doctors around the province began doing just that, the BCMA was left trying to mediate a solution. The withdrawal by some groups of doctors also thrust some physicians into the unfamiliar role of negotiator. "I was very worried that doctors in these communities would be taken advantage of," said Dahl. The association offered professional advice about negotiating skills, which most of the doctors accepted.

Late this summer, the government proposed that the BCMA become a union, which would give the government the power to use the courts to enforce agreements. (A referendum on unionization was rejected 4 years ago.)

"We have always gone for voluntary membership," said Dahl, who notes that more than 90% of the province's doctors belong to the BCMA. "We think organizations with mandatory membership get complacent and they don't do as good a job."

More important, he says, the unionization proposal failed to address the chronic underlying problems of physician recruitment and retention, and poorly functioning hospitals. "It wouldn't stop anybody from leaving the province." — *Heather Kent*, Vancouver

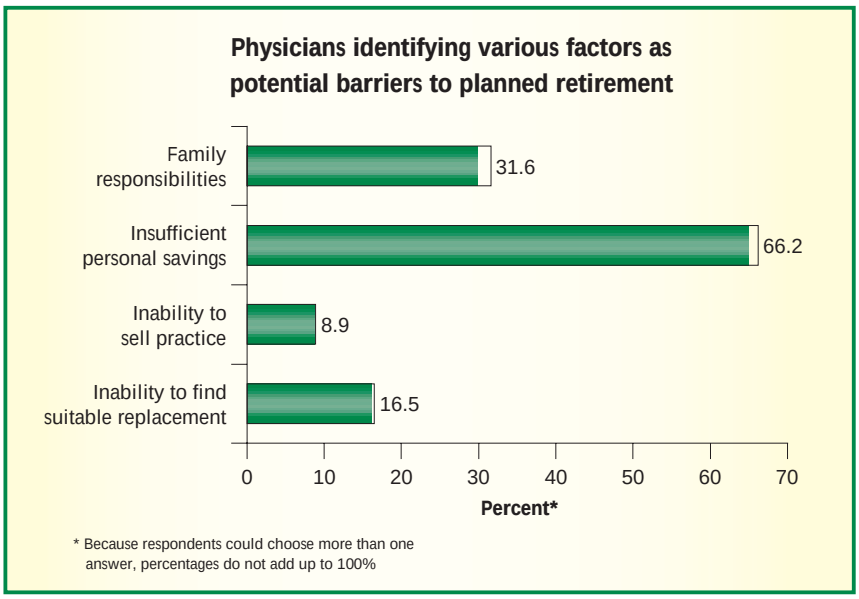
Pulse

"Freedom 55" closer to age 65 for physicians

This year, for the first time, the CMA's Physician Resource Questionnaire (PRQ) asked physicians to state the age at which they plan to retire from active medical practice. While the average age of planned retirement is 63 years, there are distinct differences among demographic groups. Female physicians tend to plan to retire earlier than their male colleagues (at age 60 versus age 64). The average age of planned retirement for GP/FPs (62 years) is slightly lower than for medical and surgical specialists (64 years).

Interestingly, the average age of planned retirement increases consistently by age group. On average, those under age 35 plan to retire at 58 years of age, while the average age of planned retirement is 63 years for those in the 45–54 age group and 66 years in the 55–64 age group. On average, active physicians aged 65 and older plan to retire at 72 years.

The PRQ also asked physicians to identify factors that might prevent them from retiring at their planned age. Insufficient personal savings was the most frequently cited barrier, with 66.2% of respondents indicating that this could interfere with their retirement plans. Younger physicians appear to be particularly concerned about having insufficient savings to retire at their planned age, with 73.3% of physicians under age 35 and 71.7% of those aged 35–44 citing this as a potential barrier, compared with 58.1% of those aged 55–64 and 43.6% of those aged 65 and older.



Overall, 16.5% of physicians indicated that failure to find a suitable replacement could impede their retirement plans. This appears to be a greater concern among rural physicians; 22.5% of them cited it as a barrier to retirement, compared with 15.9% of urban physicians. At 21.4%, GP/FPs were more likely to view inability to find a replacement as a possible barrier to retirement, compared with only 11.1% of medical specialists and 10.9% of surgical specialists.

The 2000 PRQ was mailed to a random sample of 8000 Canadian physicians, and the response ate was 36.3%. Results are considered accurate to within ±1.9%, 19 times out of 20. — *Shelley Martin*, martis@cma.ca

Alberta support program for MDs more popular than expected

Physicians are using Alberta's Physician and Family Support Program twice as much as expected. When the program was created in 1997, the Alberta Medical Association anticipated that 2% to 2.5% of eligible Alberta physicians and trainees would use it annually; in fact, 5.5% of physicians, medical students and residents have taken advantage of the free confidential referral and counselling service, and prevention and education sessions.

Robin Robertson, the program manager, says the high usage is due to publicity, effective word-of-mouth advertising and clients who trust that the service will be beneficial. The service is available to eligible Alberta physicians, residents and medical students, and to their immediate family members.

The predominant topics dealt with are family and psychological issues such as anxiety and depression, which account for 68% of primary presenting problems. "Callers may have more than one issue, but we record the primary presenting issue and this is where the statistic comes from," says Robertson. Work-related problems account for 9% of calls and the remainder involve issues such as addiction and legal problems.

The counselling programs, including retreats, are also popular. More than 100 doctors have attended "Reclaiming Equilibrium," a 2.5 day retreat during which facilitators help participants discuss the challenges of balancing a medical career with family life. — *Grace Visconti*, Calgary

Clinical Update

Lower target blood pressure for patients with diabetes mellitus

Adler AI, Stratton IM, Neil HA, Yudkin JS, Matthews DR, Cull CA, et al. Association of systolic blood pressure with macrovascular and microvascular complications of type 2 diabetes (UKPDS 36): prospective observational study. *BMJ* 2000;321:412-9.

Background

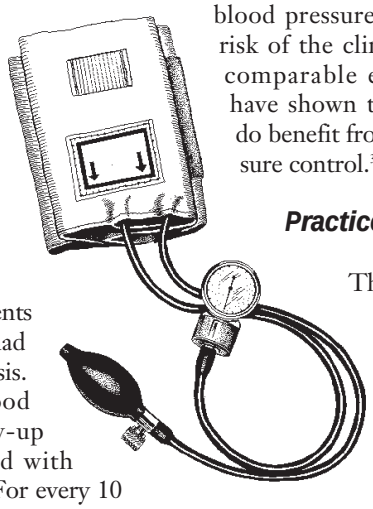
Current Canadian guidelines advise treating hypertension in diabetic patients to a target blood pressure of less than 130/80 mm Hg.[1,2] However, that recommendation was based on limited evidence.

Question

What is the relation between systolic blood pressure and the risk of macrovascular and microvascular complications among patients with type 2 diabetes mellitus?

Design

The UK Prospective Diabetes Study (UKPDS) is an ongoing prospective observational study of a cohort of patients aged 25–65 years with newly diagnosed type 2 diabetes who were enrolled through 23 centres in the United Kingdom between 1977 and 1991. Exclusion criteria included severe vascular disease, myocardial infarction or stroke within 1 year before recruitment, or major systemic illness. Blood pressure was measured 2 and 9 months after a diagnosis of diabetes, then annually thereafter. The clinical end points include all-cause mortality, death related to diabetes, complications related to diabetes, myocardial infarction, stroke, amputation or death from peripheral vascular disease, microvascular complications and heart failure. In this analysis of UKPDS data, 6 categories of mean systolic blood pressure were defined: < 120, 120–129, 130–139, 140–149, 150–159 and > 160 mm Hg. The proportional-hazards (Cox) ratio was used to assess the potential association between mean systolic blood pressure and clinical end points, adjusted for potential confounding risk factors.



Results

Only 3642 of 4801 patients recruited to the study had complete data for analysis. The mean systolic blood pressure during follow-up was strongly associated with each clinical end point. For every 10 mm Hg elevation in mean systolic blood pressure above 120 mm Hg, there was approximately a 15% increase in all-cause mortality (95% confidence interval [CI] 9%–16%, $p < 0.0001$), deaths related to diabetes (95% CI 13%–21%, $p < 0.0001$), complications related to diabetes (95% CI 9%–14%, $p < 0.0001$), myocardial infarction (95% CI 7%–16%, $p < 0.0001$), stroke (95% CI 14%–24%, $p < 0.0001$), amputation or death from peripheral vascular disease (95% CI 9%–23%, $p < 0.0001$), microvascular complications (95% CI 9%–26%, $p < 0.0001$) and heart failure (95% CI 4%–19%, $p < 0.0001$). The clinical end points were similarly associated with each 10 mm Hg increase in baseline systolic blood pressure.

Commentary

UKPDS is the largest prospective study of patients with type 2 diabetes. Its 36th report shows a strong association between systolic blood pressure and the macrovascular and microvascular complications of diabetes, even within what is considered the "normal" ranges of systolic blood pressure. Although this observational study cannot tell us whether active lowering of systolic blood pressure would decrease the risk of the clinical end points to a comparable extent, recent trials have shown that diabetic patients do benefit from tighter blood pressure control.[3,4]

Practice implications

The risk of macrovascular and microvascular complications of type 2 diabetes rises steadily above a systolic blood pressure of only 120 mm Hg. It is likely that patients with type 2 diabetes and hypertension who otherwise are medically stable (see exclusion criteria in "Design") would benefit from more aggressive lowering of blood pressure. — *Benjamin H. Chen*

The Clinical Update section is edited by Dr. Donald Farquhar, head of the Division of Internal Medicine, Queen's University, Kingston, Ont. The updates are written by members of the division.

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Public Health

The challenge posed by leptospirosis

Epidemiology

Each year an international "EcoChallenge" race involving 4-person teams of men and women is held in a different location, with the teams competing in events such as jungle trekking, open-water swimming and spelunking. This year 76 teams from 26 countries competed in the race, which took place in Borneo from Aug. 20 to Sept. 3.

Four days after the race ended, the US Centers for Disease Control and Prevention (CDC) were notified about a case of acute febrile illness in a 35-year-old man who had run in the event.[1] The Idaho Department of Public Health reported that his illness was characterized by acute onset of high fever, chills, headache and myalgia. Preliminary laboratory diagnosis indicated that the probable cause was leptospirosis, a spirochete infection transmitted to humans through water contaminated with urine from infected animals.

To identify additional athletes with febrile illness, the CDC conducted a telephone survey of the EcoChallenge participants. By Sept. 13, 37 (45%) of the 82 US athletes who had been contacted reported having a fever and 12 had been admitted to hospital. Serum samples taken in the acute phase obtained from 2 athletes in hospital were tested for leptospirosis by the CDC; the results of both the DIP-S-Assay and the ELISA IgM test were positive in 1 athlete. The results for the other athlete were initially negative, but repeat tests of a specimen obtained 4–6 days following the onset of fever yielded positive results.[1]

On Sept. 13 the CDC issued an advisory about the probable leptospirosis outbreak associated with the EcoChallenge event. By Sept. 15, 4 of the 20 Canadian participants were being treated presumptively for leptospirosis.[2]

Clinical management

Leptospirosis may be the world's most widespread zoonosis.[3] Although it is endemic in tropical countries such as Brazil, sporadic outbreaks are not uncommon in temperate regions such as the United States.[4] Typically, humans are infected through occupational or recreational exposure to water, soil or vegetation contaminated by the urine of infected animals; common reservoirs include swine, cattle, dogs, raccoons and rats. Leptospires enter the body through cut or abraded skin, mucous membranes and conjunctivae and cause vasculitis.

The incubation period ranges from 4 days to 4 weeks. The symptom spectrum is broad. The illness usually begins abruptly with fever, chills, rigours (particularly in the calves and lumbar region) and headaches, and may include conjunctivitis, abdominal pain, vomiting, diarrhea and meningeal signs. The acute septicemia may be followed by a secondary phase of severe disease characterized by jaundice, renal failure, hemorrhage or hemodynamic collapse.[4]

The organism may be isolated from samples of blood and cerebrospinal fluid obtained during the first 10 days of illness, and in the urine following the first week of illness. The microagglutination test is the standard for serological diagnosis,[5] but it can be time consuming and difficult to perform. Physicians who suspect a case of leptospirosis should contact their local medical officer of health or the Population and Public Health Branch (formerly the Laboratory Centre for Disease Control) at Health Canada for advice on sample collection and laboratory confirmation.

The CDC recommends that patients with mild cases be treated with doxycycline (100 mg orally, twice daily for 7 days) and that those admitted to hospital because of persistent fever, hepatic or renal failure or severe neurologic disturbance be treated intravenously with penicillin G (1.5 million units every 6 hours for 7 days).[1] However, a recent Cochrane review of the randomized controlled trials in which antibiotics were used to treat leptospirosis[6] identified only 3 trials that met inclusion criteria, 2 of which were of questionable quality. The authors of the review concluded that there is insufficient evidence to provide clear guidelines for antibiotic regimens for treating leptospirosis, although the evidence suggests that penicillin "may cause more good than harm."

Prevention

Chemoprophylaxis for leptospirosis is 200 mg of doxycycline orally once per week.[7] The merits of one 200-mg dose of doxycycline orally for postexposure prophylaxis are unknown. Steps to prevent leptospirosis include recognizing and avoiding swimming or wading in contaminated water and wearing protective clothing and gear such as boots, gloves and aprons. Other steps include controlling rodents, immunizing farm animals and pets, and segregating infected domestic animals. For further information see references 8 and 9. — *Erica Weir*, CMAJ

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