Patients who develop infections following hip and knee replacement surgery may benefit from a new type of prosthesis that releases built-in antibiotics until a new joint can be implanted.

Prostalac (prosthesis of antibiotic-loaded acrylic cement) hip and knee joints were developed over the past decade by Dr. Clive Duncan, head of the Department of Orthopedics at Vancouver Hospital, Dr. Bas Masri, Dr. Chris Beauchamp and Nancy Paris-Seeley, a biomedical engineer at the British Columbia Institute of Technology, and their colleagues. They have been tested on hundreds of patients at the Vancouver Hospital and the Mayo Clinic Scottsdale in Arizona, where Beauchamp now works. Health Canada approval has already been obtained, and approval from the US Food and Drug Administration is being sought.

About 1% of North American joint-replacement patients experience infections. Previously, patients needed bed rest and a course of antibiotics for several weeks. The only other option for in situ antibiotics has been “beads” of antibiotic-loaded cement, but the surgical and engineering team wanted to give patients a functioning joint along with the medication.

The main engineering challenge was to create a temporary joint, explained Paris-Seeley. The researchers wanted a simple press fit, similar to home-made Popsicle moulds, that could be inserted and popped out later. The eventual solution was to create a set of small, medium and large moulds. The joints are made in the operating room, where the surgeon chooses the antibiotic, powders it and combines it with bone cement, then sets it in the appropriate mould. Stainless steel is used for the stem parts of the joints and the cement coating interfaces with the bone surfaces. “We wanted to go with inexpensive materials that would do the job,” says Paris-Seeley.

The procedure takes about 20 minutes longer than conventional joint surgery. Surgeons are “very enthusiastic” about the devices, says Duncan. He says the antibiotics are “extraordinarily effective” because a huge dose stays in the infected area while the rest is absorbed very slowly into the bloodstream.

Duncan says the joints reduce the length of hospital stay from 18 days if the patient is resting in bed without an artificial joint to 6 days. Rehabilitation time is also considerably shorter. — Heather Kent, Vancouver

Industry representatives, researchers and health professionals are uniting to map Canada’s future needs for medical-imaging technology. Industry Canada, which brought these divergent players together for its Medical Imaging Technology Roadmap project, hopes to identify technologies that will meet market demand and improve patient care over the next 4 to 10 years. “Improving medical care has been married with making industry more competitive,” says project facilitator Diane Law. The completed roadmap is due in March 2000.

Dr. Brian Lentle, one of 68 roadmap committee members and past president of the Canadian Association of Radiologists, says the effort comes at a crucial time. “We’ve suffered from our failure to invest in technology,” says Lentle. “We have a substantial technical deficit now that is a problem.”

Canada recently slipped to the bottom one-third of countries in the Organization for Economic Co-operation and Development in terms of technology availability. With CT scanners, for example, Canada ranked 21st among 28 countries; for lithotriptors the country ranked 19th among 22 countries, and for MRI machines 19th among 27 countries. “I wonder if health care is this expensive because we don’t fully benefit from

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Logging on in record numbers

Results from the CMA’s 1999 Physician Resource Questionnaire (PRQ) point to a notable increase in the number of physicians who use the Internet, with the proportion rising from 56% in 1998 to 66% in 1999. Of those who do not yet log on, 42% indicated that they plan to do so in the coming year. Although male physicians are more likely to use the Internet than females (70% versus 58%), the gap is narrowing. In 1998, 61% of male physicians used the Internet, compared with 44% of female physicians.

Almost two-thirds (63%) of Canadian doctors now use email, up markedly from 51% in 1998 and 37% in 1997. The proportion of physicians who use the Internet to perform searches of bibliographic databases is also up substantially from 1998 (53% versus 42%), as is the proportion ordering documents and books online (27% versus 13%). The CMA Online Web site was visited by far more PRQ respondents in 1999 (27%) than in 1998 (15%), a fact that may help explain why CMA Online now ranks among the world’s top 20 000 Web sites. (According to Netscape, its current ranking, in terms of popularity, is 19 592. In comparison, the site operated by the College of Family Physicians of Canada ranks 223 470, while the Medical Post site stands at 457 951. The World Wide Web is currently home to more than 7 million Web sites. — Ed.)

The proportion of physicians who accessed the CMA’s online Clinical Practice Guideline Infobase jumped from 9% in 1998 to 21% in 1999. In 1999, 50% of all Canadian physicians visited Web sites intended for physicians, and 41% visited CME Web sites.

This column was written by Shelley Martin, Physician Survey Analyst with the CMA’s Research Directorate. Readers may send potential research topics to Patrick Sullivan (sullip@cma.ca; 613 731-8610 or 800 663-7336 x2126; fax 613 565-2382.)

Creating a roadmap

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high technology like radiology,” says Lentle.

Part of the problem is that Canada doesn’t have a large indigenous manufacturing capacity. “I’d love to see some of those big cheques go to Canadian companies,” he says.

Part of the roadmap’s aim is to alert industry to technology’s potential and to acquaint users with what’s available in Canada. “We’re bringing people together who wouldn’t normally get together,” says Law. “In the end, the process is probably as important as the document. The value is in people bringing information together.”

The roadmap’s discussion paper, completed last March, set the stage for the formation of 5 working groups to assess future needs and other issues. Lentle is cautiously optimistic about the end result, but notes that “they’re expecting a great deal without putting much [money] into it.”

The project is one of a series of roadmaps that Industry Canada is facilitating; others include forestry and aerospace. For more information, visit http://strategis.ic.gc.ca/medimage — Barbara Sibbald, CMA