

London MDs provide window to surgery's future

It's fitting that the world's first closed-chest, robot-assisted, beating-heart coronary artery bypass graft (CABG) took place 3 months before the end of the century, because the surgeon who performed it says the procedure represents "a preview into cardiac surgery for the [next] millennium."

A "new era of cardiac surgery is upon us," says London, Ont., cardiac surgeon Douglas Boyd, who performed the procedure at the University Campus of the London Health Sciences Centre (LHSC) in October. That operation attracted national and international attention, but since then Boyd's team has quietly performed another 5 procedures. He believes robotic and computer-enhanced surgery will revolutionize surgery in all disciplines. "We just don't know what the limits are yet. Right now, we're rethinking the way we do every procedure." With minimally invasive computer-enhanced surgery, the surgeon gains improved dexterity and vision in a small space thanks to robotics and digital cameras. In closed-chest surgery, Boyd sits at a console several feet from the patient. He activates the robot and controls instruments with his voice. The entire procedure, including sewing



Boyd: "enabling technology"

of the graft, is performed with the robot through 3 pencil-sized incisions and 1 incision 2 to 3 cm long. "This enabling technology gives us the tools and dexterity that hitherto were just impossible," said Boyd, the director of minimally invasive and robotic cardiac surgery.

When Boyd joined LHSC 3 years ago, he thought this achievement was a decade away. Then the team "mapped out a plan of what the utopia of cardiac surgery would be." They defined "utopia" as CABG without opening the chest or stopping the heart.

The group established 5 or 6 critical tasks and divided them into 110 steps. "At each step we did the laboratory experimentation, the clinical experimentation and the outcomes evaluation," explains Boyd. The group then published the results.

These organizational details not only led to a world first, but also helped secure funding for the Zeus Robotic Surgical System from London philanthropists Richard and Beryl Ivey. LHSC is the only centre in Canada and 1 of 4 in North America to use the Zeus system clinically. The technology, initially developed by NASA for a mission to Mars, is expected to contribute significantly to patients' well-being and to reduce costs and improve access to treatment.

Although data are not yet available for the latest procedure, findings from 58 minithoracotomy, robot-assisted, video-enhanced coronary bypasses at LHSC — these involve a 7- to 8-cm incision and hand-sewn graft — indicate significant improvements over conventional surgery. The average length of hospital stay was 3 days compared with 6.5, and the incidence of atrial fibrillation was 4% compared with 25%. There were 20% fewer complications and no patients required blood. "The world's most advanced technology is not worth a thing if it doesn't benefit patients," says Boyd. "That's why we think it's important to evaluate what we do to ensure it's better for patients. What we've found with our systematic approach is that this is a better way to do coronary revascularization." — *Lynne Swanson*, London, Ont.

Pediatric ethical conflicts increasingly confusing

If patients are not competent enough to make health care decisions, what principles should govern the decision-making of their health care professionals, especially when life-and-death issues are involved?

Anyone working in pediatrics is acutely aware of the conflicts involved in these cases. Dr. Christine Harrison, director of bioethics at Toronto's Hospital for Sick Children, told the recent meeting of the Canadian Association of Paediatric Hospitals that "such cases are not unusual in our system. But they are receiving a lot of media attention because of particular pressures in contemporary Canada."

In Canada's pluralistic society, cultural practices are often in conflict with the imperatives of evidence-based medicine. Moreover, as pediatric institutions shift to an emphasis on "family-centred care," professionals and parents must establish a partner-partner relationship rather than an expert-client one.

As well, more and more Canadians are turning to alternative therapies: 75% of the families bringing children to Sick Kids are also using alternative treatments such as

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An ethical minefield

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herbal medicines. In the case of Tyrell Dueck, a 13-year-old Alberta cancer patient, health authorities had to back off and watch Dueck's parents waste \$65 000 (of which they have raised only \$45 000) on a trip to a Mexican clinic for an unlicensed, unproven therapy.

"What mechanisms are required within institutions to turn conflicts into consensus?" asked Harrison, who acknowl-

edged that these cases never involve "win-win" solutions. When it appeared possible that the courts would order the health care team to impose treatment on Tyrell Dueck, hospital staff faced the horrifying prospect of forcing the child to undergo surgery. (His cancer proved too far advanced for surgery, and he died last summer.)

In Canada, the Bioethics Committee of the Canadian Paediatric Society has already articulated the principles on which decisions about the withdrawal of treatment for critically ill children should be based (*CMAJ* 1986;135[5]:447-8). — *Charlotte Gray, Ottawa*