

tional delay in surgery. However, whether biliary complications, such as acute cholecystitis, obstructive jaundice, cholangitis or pancreatitis, occur more frequently in patients with comorbid conditions is unclear.

There is no doubt that risk selection (the process whereby the makeup of a population changes over time through removal of subjects at higher risk) may bias the observed risk, because of unobserved heterogeneity.² For instance, when the risk of symptoms worsening is constant over the duration of the wait, risk estimates without adjustment for heterogeneity of individual patients will probably underestimate the true risk associated with longer waiting time, and the risk associated with longer relative to shorter waits may also be underestimated. Therefore, our message to health policy-makers should be that the risk of emergency surgery while waiting for elective cholecystectomy increased by a factor of almost 3 after 20 weeks on the waiting list, and that this is perhaps an underestimate.

Boris Sobolev

Mark FitzGerald

The Centre for Clinical Epidemiology
and Evaluation
Vancouver, BC

Dale Mercer

Queen's University
Kingston, Ont.

References

1. Sobolev B, Mercer D, Brown P, FitzGerald M, Jalink D, Shaw R. Risk of emergency admission while awaiting for elective cholecystectomy. *CMAJ* 2003;169(7):662-5.
2. Keiding N, Andersen PK, Klein JP. The role of frailty models and accelerated failure time models in describing heterogeneity due to omitted covariate. *Stat Med* 1997;16:215-24.

How to improve organ donation rates

In Canada, the primary postmortem source of transplantable organs is patients whose deaths have been determined on the basis of brain death criteria (heart-beating donors). Greg Knoll and John Mahoney¹ suggest that patients who die after cardiac arrest (non-

heart-beating donors [NHBDs]) should also be considered as a source of transplantable organs.

Fundamental changes to organ donation in Canada would seem most appropriate if all other conventional approaches related to brain death donation had already been optimally explored. For example, the Collège des médecins du Québec reviewed all deaths in Quebec for the year 2000² and found that, of all patients who appeared brain dead on the basis of the chart review, 23% had not been identified as potential organ donors at the time. Furthermore, for patients with a diagnosis of brain death, 24% of the families were not approached for consent to donation.

Acknowledging variability in the recognition, diagnosis and documentation of brain death, the Canadian Council for Donation and Transplantation (CCDT), which provides advice to various levels of government, sponsored a national forum on the subject in April 2003.³ The forum's multidisciplinary participants developed standards to address the optimal management of severely brain injured patients who may experience brain death, including the option of organ donation as a part of standard end-of-life care.

In its position paper,⁴ the Canadian Critical Care Society (CCCS) has called for a moratorium on NHBD protocols without prior national discussions. The CCDT is preparing to initiate such a national discussion, with input and recommendations from representatives of the relevant health care professions and society as a whole. Planning for this initiative is scheduled for 2004.

Sam D. Shemie

Division of Critical Care
Montreal Children's Hospital
Montréal, Que.

Chair, Canadian Forum on Severe Brain Injury to Neurological Determination of Death

Christopher Doig

Department of Critical Care Medicine
Foothills Hospital Multisystem Intensive Care Unit

Calgary Health Region

Calgary, Alta.

Chair, Donation Committee

Canadian Council for Donation and Transplantation

Graeme Rocker

Professor of Medicine

Dalhousie University

Halifax, NS

President, Canadian Critical Care Society

Philip Belitsky

Director, Transplantation Services

Queen Elizabeth II Health Sciences

Centre

Halifax, NS

Chair, Canadian Council for Donation and Transplantation

References

1. Knoll GA, Mahoney JE. Non-heart-beating organ donation in Canada: Time to proceed? [editorial]. *CMAJ* 2003;169(4):302-3.
2. Morin JE, Baran D, Dandavino R, Marleau D, Naud A, Cloutier R. *Potential organ donors in Québec hospitals year 2000. Transplantation Committee report*. Montréal: Collège des médecins du Québec; 2003. Available: www.cmq.org/uploadedfiles/transplantationEng.pdf (accessed 2004 Jan 5).
3. Shemie SD, Doig C, Belitsky P. Advancing toward a modern death: the path from severe brain injury to neurological determination of death [editorial]. *CMAJ* 2003;168(8):993-5.
4. *CCCS position paper on organ and tissue donation: executive summary*. Toronto: Canadian Critical Care Society; 2001. Available: www.lhsc.on.ca/critcare/ccs/cccs/ODpospaper.pdf (accessed 2004 Jan 5).

Greg Knoll and John Mahoney¹ correctly point out that the use of NHBDs could increase the number of cadaver organs available for transplantation in Canada. This possibility is under consideration in Quebec, and the Canadian Council for Donation and Transplantation will discuss the topic in an upcoming forum.

However, the use of NHBDs is fraught with ethical and logistic problems, and the addition of this type of donor to the existing pool will not be sufficient to meet the increasing need. In contrast, there is definitely room for better identification of brain-dead donors, as underlined in a recent study by the Collège des médecins du Québec.² In response to that study, the Quebec government is now funding a network of in-house organ donor coordinators, whose role is to help identify potential donors and to support both families and medical personnel throughout the organ donation process.

Living related and unrelated kidney donors are also underused in Canada.