Between a rock and a hard place. The plight of surgeons advocating progress through new technology

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New technologic advances in surgery fascinate everyone, especially when outcomes are spectacular. The media are quick, sometimes too much so, to embrace medical advances, and increasingly patients and their family demand them.

However, what the public does not see is the difficult trek from innovation to full scientific validation and acceptance. Social justification and cost determination of new technology are necessary before its broad acceptance. This is complicated by many factors.

Health ministry technocrats and politicians not interested in new technology

These people administer limited budgets and understandably want "the biggest bang for their buck." Primarily, they will underwrite basic medical care (curative or preventive) with demonstrable positive influence on national health indicators. Their favourite myth is that costly technology is most often used in the last 6 months of a patient's life. Accordingly, they claim that new technology brings little added value to overall outcomes in our health care system. Politicians and health ministry technocrats therefore rarely promote the acquisition of new technology. They often fail to see how, historically, new technologies have improved the outcomes of medical care and have allowed hospitals to make an amazing transition toward outpatient care that has reduced hospital expenses and improved efficiency. The responsibility for orderly integration of new technology will increasingly belong to academic medical centres, yet there very few signs to indicate that the university community is ready for this duty. Academic medical centres have often been strong on acquisition and short on rationalization and evaluation of new technology.

Economists

Economists have not spent much time measuring the productivity gains resulting from technologically driven minimally invasive therapies in medicine. About 40 000 cholecystectomies are done in this country every year. With the coming of laparoscopic cholecystectomy, the patient's return to normal activity has gone from approximately 2 months to 2 weeks, roughly a 6-week improvement per patient. What these 240 000 weeks (4615 years) of productivity have meant to the gross national product has yet to be measured. This represents the savings from just 1 procedure. We could say the same for many other advances like lithotripsy for treatment of kidney stones, the use of arthroscopy to repair damaged joints and the treatment of common duct stones by endoscopic retrograde cholangiopancreatography. It seems that drawing attention to the problems that accompany the introduction of new advances has recently been more appropriate than presenting a balanced view that includes the realized and potential benefits to society as a whole.

Surgeons are therefore caught in a publicly funded system that keeps costs down by setting up as many barriers as possible to new advances. On the other hand, patients invariably request the best available treatment, thus constantly placing surgeons between a rock and a hard place.

Industry

Industry has a profit-driven agenda, and it seems that little help can be expected from this quarter. It should not come as a surprise that the first goal of industry is to put the most competitive product on the market

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that will maximize profits for the shareholders. We are all grateful to corporations for their many contributions to progress in medicine. However, they are capitalists and not necessarily altruists. Market forces more than societal needs drive the corporate philosophy. Marketing hype also confuses the issue by making logical choices more difficult, as exemplified by laparoscopic hernia repairs. If we are not critical enough, our institutions, and in the end the consumer, wind up paying part of the bill. We should not be offended or surprised by these truisms. These issues need to be addressed to help our institutions avoid the mistakes of investing in the wrong technology.

For example, in minimally invasive surgery, contradictory corporate arguments are made to justify acquisition of reusable, limited reuse or single-use surgical instruments. Objective data evaluating comparative costs of acquisition, safety, maintenance and durability of various types of instruments are lacking. The article in this issue by DesCôteaux, Blackmore and Parsons (page 136) points to the problems of obtaining objective data to help guide the surgical community into cost-effective technology. In this study, despite methodologic difficulties, the authors identified that the reusable instrument (hook cautery) rather than its limited-reuse version was more cost-effective. Such independent evaluations should be encouraged. The article did not address the more controversial aspect of the reuse of single-use medical devices.

Solutions

In this era of accountability at all levels, surgeons have to include themselves in the evaluation process for the most cost-effective way new technology can be transferred to patient care. Too often surgeons have considered these preoccupations too mundane to warrant their attention. However, we have a responsibility to influence current thinking in our institutions. We must put pressure on decision-makers and on corporations to come up with products that take into account all aspects of the health care equation. At present corporations are allowed to make decisions that cater to the myopic view of their immediate constituents. A few suggestions can help:

- Start or revive a multidisciplinary committee for reprocessing single-use medical devices in your institution. It is a reality that most hospitals reprocess single-use medical devices. A 1987 survey by Campbell and associates[1] of 1238 Canadian hospitals found that 41% regularly reused disposable medical devices. The rate for hospitals with more than 200 beds was 86%.[1] Often the process is improvised. Reprocessing single-use devices has to be a transparent process and shown to be no different from or inferior to that of reprocessing reusable devices or instruments. Written reprocessing protocols have to be drawn up for each instrument. Feasibility trials have to be run. A variety of issues from training, to costs, to quality control have to be addressed and should include everyone concerned with the process. The final step requires board approval. This can result in substantial savings and can occasionally mean the difference between access to or denial of new technology. Our experience in reprocessing disposable laparoscopic instruments has resulted in savings of $90 000 annually.[2] We know of renal dialysis units that could not operate if some single-use medical devices were not reprocessed. Occasionally, proof of the feasibility of reprocessing selected single-use instruments comes in surprising ways. In the litigious environment of the United States, a Chicago company is collecting single-use instruments from hospitals (general surgery, orthopedics, urology) and reprocessing them for a fee that covers potential liability.
- Become aware of how corporations can be influenced to modify their strategy. In October 1994, the Canadian Coordinating Office for Health Technology Assessment (CCOHTA) held a 2-day symposium in Montreal on the reuse of disposable medical devices. It was attended by more than 300 delegates from many countries, representing government, industry, medical ethics, law and medicine. Other than to learn about the ethics and legality of reuse, it was an eye-opener to learn that the courts could make corporations divulge the scientific basis for labelling a product "single-use only" other than for the obvious profit motive and their willingness to distance themselves from possible litigation. If it can be shown that a so-called "single-use" product can be safely reused, corporations can be made to prove how often their product can withstand reuse. It became clear during that meeting that opposing forces were facing each other with their respective agendas. On one side, the single-party payers (governments) want to dispense the best care at the lowest cost, and on the other, private corporations are selling their wares for what the market will bear. Again, physicians are caught between a rock and a hard place. Our governments and hospitals do not have the funds or the fortitude to tackle these issues directly.

Surprisingly, the Canadian health care system may indirectly get help from market forces behind the managed care movement in the United States. The ferocious drive to cut costs across the border is forcing some corporations that sell single-use only products to revise their strategy. Some

companies previously involved exclusively in single-use instruments are either relabelling their instruments for limited-reuse or making them entirely reusable.

• Ensure that decisions to purchase new equipment or instruments are all inclusive. Most hospitals that have started laparoscopic surgery in the early 1990s are replacing their first-generation laparoscopic instruments. Many current instruments offered on the market are "take-aparts." This, theoretically, is to promote easier and more thorough cleaning of the instruments. Many institutions have purchased these instruments without involving the people that have to decontaminate and reprocess such instruments. If your Central Supply Department (CSD) is anything like the ones I am familiar with, this can become a nightmare. Quality of personnel not withstanding, anyone who thinks that introducing dozens of "take-apart" instruments for daily processing can be an easy and seamless operation needs some education in the ways most CSDs work. Take-apart instruments lead to misplaced and lost parts that generate costs. It also means having to put these instruments back together correctly in a unit that deals daily with thousands of instruments from various specialties. For many, this is impossible. Bad purchase decisions can be made by using a top-down process that overlooks important issues and stakeholders. It allows acquisition of instruments that are over-engineered, impractical or expensive to maintain.

Interestingly, other corporations have dealt with the same issue of cleaning thoroughness by producing instruments with the insulation bonded to the instruments or with cleaning channels designed to be used with ultrasonic washers. Clearly solutions can be found if ideas by those individuals on the front line of instrument use are valued.

• Encourage internal initiative to question new products or instruments. I will always remember that junior resident doing a rotation in the surgical intensive care unit and listening to nurses discussing the recent increase of *Pseudomonas* infections in the unit. He reflected on the subject and decided to take culture samples from the solution that the hospital had recently purchased as skin disinfecting product. Every sample grew *Pseudomonas*. This was a very positive career move for him. We must become very critical of the products that we use and not hesitate to do our own evaluation of the manufacturer's claims especially when problems arise.

Economists tell us that the next decades will define a period of organized rationing of medical care, because no nation, however prosperous, can afford all the new, expensive advances. This will require that physicians and surgeons become more active in the evaluation of new technology. We must develop a credible lobby to advise government and industry in this area. This consensus must arise from the trenches of surgery, be evidence-based and not be an intellectual technocratic process far removed from daily reality.

References

1. Campbell BA, Wells GA, Palmer WN, Martin DL. Reuse of disposable medical devices in Canadian hospitals. *Am J Infect Control* 1987;15(5):196-200.

2. DesCôteaux JG, Tye L, Poulin EC. Reuse of disposable laparoscopic instruments: cost analysis. *Can J Surg* 1996;39(2):133-9.

Books and Other Media Received
Livres et autres documents reçus

This list is an acknowledgement of books and other media received. It does not preclude review at a later date.

Cette liste énumère les livres et autres documents reçus. Elle n'en exclut pas la critique à une date ultérieure.

A Primer on Amputations and Artificial Limbs. George Murdoch and A. Bennett Wilson. 295 pp. Illust. Charles C Thomas, Publisher, Ltd., Springfield, Ill. 1998. US$63.95 (clothbound); $US49.95 (paperbound). ISBN 0-398-06800-3 (clothbound); 0-398-06801 (paperbound)

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Transplantation Surgery. Edited by John L.R. Forsythe. A companion to Specialist Surgical Practice. Series editors: Sir David C. Carter, O. James Garden and Simon Paterson-Brown. 336 pp. Illust. W.B. Saunders Company, Ltd, London, England; Harcourt Brace & Co. Canada, Ltd., Toronto. 1997. Can$106. ISBN 0-7020-2146-6

Varicose Veins, Venous Disorders, and Lymphatic Problems in the Lower Limbs. David J. Tibbs, David C. Sabiston Jr., Mark G. Davies, Peter S. Mortimer and John H. Scurr. 254 pp. Illust. Oxford University Press, London, England; Oxford University Press, Canada, Toronto. 1997. Can$268.95. ISBN 0-19-262762-7