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**Editorial
Éditorial**

The pillars of a surgeon's life

The editors' page allows us from time to time to wax philosophical. This is my next-to-last opportunity, as coeditor, to reflect on times past and look into the future. A discussion of issues relating to career structure and development seems particularly relevant in today's world, where options in surgery in general, much less academic surgery, seem somewhat limited. Indeed, in the United States, the Cassandras are crying that there is no future in the surgical specialties, with managed care, or the insurance companies, and government regulations driving the agenda. Thus, time is increasingly devoted to patient care, paperwork and administrative restrictions, and the flexibility to practise as a liberal profession is increasingly limited in the entrepreneurial land of opportunity. In Canada, there is similarly little time for thought much less research as economic pressures, support systems and hospital funding are all going through major changes. Research has always been hard to do, but funding is increasingly difficult, and the marriage between a clinical life and a research mission are difficult to integrate. Time pressures are extraordinary and, indeed, clinical work is simply easier, something for which we are trained and something that is certainly more immediately rewarding, than the long road of administration, teaching or investigation.

That being said, reflections of doom and gloom are not very useful unless they lead directly to potential solutions. It has always been my view, to the annoyance of my colleagues and the residents, that all physicians should read a few general

medical journals and probably a general scientific journal. The reason for this is the need to know what is going on in the world around us, whether it is a scientific world, the evolution of medical care in other jurisdictions, the directions in which frontiers in clinical medicine are moving or just in general a sense of where other specialties within the medical profession are going. I have, therefore, made a habit of reviewing on a weekly basis the *The New England Journal of Medicine*, *The Lancet*, *Canadian Medical Association Journal*, and the first sections in *Science*. In a recent issue of *Science*, Daniel Koshland Jr. has written an essay entitled "The seven pillars of life," which caught my eye.¹ I must say the "hook to read" was the image of "the temple of PICERAS" with 7 pillars having interesting drawings on each. Koshland states, "by Pillars, I mean the essential principles — thermodynamic and kinetic — by which a living system operates." Who could PICERAS be?

The first of the 7 pillars is *program*: the plan for biological life represented most evidently by DNA. Next is *improvisation*, which is the need to change the program as circumstances require. These circumstances should give rise to long-term changes (e.g., climatic circumstances — levels of water and so on). The third is *compartmentalization*, where components of an organic or biologic system must compartmentalize in order to keep their function separate from each other. The creation of multiple cells was a form of compartmentalization, separate from a single-celled creature, and was fol-

lowed by the creation of organs and the complex biologic systems that humans and other mammals represent. Fourth is *energy*, clearly the driving force of the reactions from which mobility comes and the ability to generate the biochemistry that allows our bodies to survive.

Regeneration is the fifth pillar. This is self-evident as new cells are required to deal with the loss of old cells (the gastrointestinal tract turning over its epithelium and the ability of a resected liver to enlarge in order to deal with the biologic requirements of the body). *Adaptability* is the sixth pillar. It differs from improvisation in that it represents a short-term need to reorganize, or restructure or adapt to suddenly changing circumstances. Examples of adaptability are starvation, where the body has clearly defined adaptability mechanisms to deal with loss of nutrients, or hemoglobin levels as a function of ambient oxygen levels. The last pillar is *seclusion*, which in large part is the ability to separate the various toxic reactions that go on in the body so that other systems are not injured by these reactions. The first letters of the pillars spell PICERAS, which Koshland proposes as the name of the goddess of life. The Greek ring to PICERAS is reinforcing as are his ideas.

Could one extend these thoughts to a surgeon, an academic surgeon, or a Department of Surgery? Yes, but I would propose a different order. The first letters would then spell PESCAIR, a word that does not have much resonance, is not attractive and certainly does not sound like a goddess. Nevertheless, in this sense we all

need to take the thoughts expressed by the 7 pillars and apply them to our own growth and development.

Program is the plan for our life. It could be a 5-, 10- or 15-year plan, but it defines where we want to go and how to get there. It must represent the directions for the future and must be revisited regularly. *Energy* is an essential component, not only of life but of a surgeon's life, where we must respond alertly and appropriately to crisis at all times of the night and day. *Seclusion* provides time for reflection and thought; time needed to plan the operation; time of tranquility to think through difficult problems.

Compartmentalization is an essential quality for surgeons, particularly as our lives evolve and become more complex. This quality is needed most when the 8 o'clock case goes poorly; the 10 o'clock case cannot be allowed to suffer as a result of our thoughts or concerns about the first case of the day. We must compartmentalize and move on to the next task without remembering the past disaster. *Adaptability* is looking down the road and seeing the directions in which not only our lives but our professions are moving and adapting to those circumstances. Perhaps laparoscopy and other components of minimally invasive surgery best represent this issue for the individual surgeon, the academic and the Department of Surgery. Those individuals and departments who missed the importance of minimally invasive surgery have been left in the dust of those who adapted, clinically, academically and in terms of market share. *Improvisation* is often required in the operating room as a never-before-

seen situation presents. The ability to supervise is an important and valued trait of a successful surgeon. We are constantly faced with new situations. I am always amused by the resident saying "I've never seen this before," biting my tongue not to say "wait until you are in practice."

Finally, *regeneration*. It is here where perhaps surgeons are the least thoughtful. They need to take significant holidays — the advice to me has always been to take 3 weeks: use the first to rest, then do something different and by the end of your final week you'll be keen to return to work. Regeneration also reflects itself in our ability to take time off on weekends and to have other components of our life, which allow us to regenerate and revitalize from the vicissitudes of our profession. Finally, I would propose in regeneration the idea of sabbaticals, not something surgeons have done often but which, in my experience and that of others who have done taken sabbaticals, have been enormously valuable.

PESCAIR doesn't have the Greek ring needed for a goddess, so I suppose I am stuck with PICERAS. The concepts are worthy of a goddess; these "seven pillars of life" have value.

If you have come this far, I thank you and believe that Koshland's "seven pillars of life" have a direct application to our lives as surgeons.

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Coeditor

Reference

1. Koshland DE Jr: Special essay. The seven pillars of life. *Science* 2002;295:2215-6.