

Future shock?

The prediction of future events by trained priests was an important aspect of the religious and political life of ancient civilizations. Among antiquity's most famous prognosticator was the Oracle of Delphi at the great Temple of Apollo, a role traditionally played by a priestess called the Pythia. A goat would be killed on the day the Pythia was to deliver a prophecy. If a careful examination of the goat's entrails yielded favorable results, the Oracle would proffer a prophecy; otherwise, the Pythia would return silently to her temple. To maintain her status as a diviner of fate, the Pythia had to be proven correct in >50% of her prophecies (a perilous statistical endeavor); predict an event of great societal importance (an improbable circumstance); or utter astutely phrased prophecies amenable to multiple meanings, often causing supplicants to misinterpret the prophecy (a more likely scenario).

In their article "The Future of Our Specialty: Critical Care Medicine a Decade From Now" appearing in this issue of *Critical Care Medicine*, Drs. Fink and Suter (1) assume the roles of present-day Oracles. They summarize the presentations, formal and informal, delivered by an impressive collection of academic luminaries during a Round Table Conference on the topic of "My ICU in Ten Years." We presume, however, that the authors lacked the benefit of examining the entrails of a sacrificial goat before writing the manuscript. More than a bold extrapolation into the future, the article offers a thoughtful commentary on the problems and trends presently affecting our specialty. How these trends may change the everyday practice of critical care medicine in the next decade is not clearly stated in the article, which perhaps should have been more aptly titled "The Current State of our Specialty." The

few prophecies found in the article are, just as those of the Pythia's, shrewdly phrased.

Given the collective fund of knowledge amassed by the Round Table participants, it would have been interesting to learn their opinion on what may be the three most important forces affecting the present and future course of critical care medicine. These are changes in population distribution, a declining intensivist workforce, and the crushing economic burden of technologically advanced medicine.

Most industrialized countries, including the United States, Europe, and Japan, are experiencing a dramatic graying of their population. January 2006 saw the vanguard of the baby-boomer generation turn 60. As it ages and experiences declining health, this socially proactive group will demand the right to choose where, how, and by whom they are treated. Perhaps most important, they will demand a central role in deciding the timing and mode of their dying. Right-to-die issues, in particular assisted suicide, will assume center stage in the pantheon dedicated to societal worries. We need only recall the political ruckus created by the Terry Schiavo case (2) for a glimpse of things to come. The intensive care unit (ICU) will be the arena where many societal and legal battles will be fought, and intensivists will be in the middle of the fray.

According to the COMPACCS study (3), itself now >6 yrs old, the demand for care will outpace the supply of critical care medicine specialists by 22% by 2020 and 35% by 2030. This supply/demand imbalance will be aggravated by increased rates of retirement of ICU personnel. There is some irony to be found in that sensitivity analyses suggest that the only variable capable of maintaining an adequate supply-to-demand ratio to the year 2030 is delaying physician retirement until age 77, an unlikely possibility. A most intriguing proposal is made by Drs. Fink and Suter regarding the establishment of critical care medicine programs as primary specialty for graduating medical

students. Compared to the traditional fellowship track, a 4-yr critical care medicine program should increase the graduation rate of new intensivists and also alleviate the time commitment and financial burden currently placed on trainees. One wonders whether graduating intensivists will acquire a firm understanding of the many medical and surgical concepts that form the foundation of critical care medicine or if they will develop the skills necessary to conduct independent research. Nonetheless, the idea has great merit and should be explored further.

Health care costs in the United States are projected to rise during the next decade to 20% of our gross domestic product. At the height of the Cold War, economists estimated that any nation budgeting >25% on their gross domestic product to armaments could not sustain economic growth, thus the collapse of the former Soviet Union. A similar fate appears to be in store for iconic American corporations as they reel from the burdensome expense of providing for the health care of their employees and retirees. Given that ICUs consume a significant portion of the health care dollar, we can expect an increasingly intrusive role by government and industry in shaping the practice of medicine in the ICU 10 yrs from now. This convergence of socioeconomic factors creates a climate of change and possibilities. The impact that practicing intensivists and professional societies will have in influencing the course of events remains to be seen.

We found the paragraph on genotype or phenotype-guided therapy somewhat disturbing. As the disastrous history of the first half of the 20th century attests to, the racial/phenotype slope is a slippery one, fraught with ethical and moral issues. There should be great caution in urging the initiation of clinical trials of phenotype-guided therapy in the ICU. On the other hand, the authors should be congratulated for the forthright and honest manner by which they approach this controversial topic in their article.

The statement that every ICU patient should be enrolled in a research study,

Key Words: intensive care; rationing; manpower; future trends

Copyright © 2006 by the Society of Critical Care Medicine and Lippincott Williams & Wilkins

DOI: 10.1097/01.CCM.0000220202.07712.B8

although a worthy goal, shows a disconnect from practicing critical care physicians who spend their days and nights in the ICU. In fact, graduates spend less and less of their time doing research (4), a fact perhaps reflected by the declining rate of manuscripts submitted for publication from the United States (5).

Taking advantage of the freedom of expression accorded to those foolish enough to write editorials, we also will don the garb of Oracles and offer our prophecies regarding the practice of critical care medicine circa 2016. A utopian view of the future envisions centralized and disease-focused ICU centers of excellence strategically distributed throughout the country according to population density distribution. An older but a generally healthier population lowers the per capita utilization of ICU resources, freeing some of these resources for clinical research. Patients and their families accept rationing ICU services according to predetermined ethical algorithms as the most rational manner with which to apportion scarce resources. The supply of intensivists increases dramatically as training time shortens and salaries rise significantly. Trained intensivists provide continuous 24-hr ICU coverage, complemented in many institutions by the judicious application of telemedicine centers. Genotype-guided therapy allows for the early identification of vulnerable individuals and, along with technical advances in organ specific monitoring and therapeutics, results in marked decreases in ICU mortality and length of stay.

On the other hand, a dystopian view of the future envisions a declining number of intensivists working longer hours for

lower pay. Given a ballooning government deficit, Medicare reimbursement continues to decline. Moreover, U.S. corporations slash their contribution to health care cost, arguing that universal health care is a governmental, not a corporate, concern. Congress continues to debate right-to-die issues as America becomes polarized along previously defined societal fault lines into pro-choice (assisted suicide) and pro-life groups. Another large prospective, randomized study of 100,000 conducted in China fails to show improved survival of septic patients. The last pulmonary artery catheter manufactured in the United States is donated to the Smithsonian Institution. Debate rages on the results of the controversial BATMAN trial showing lack of efficacy and increased costs associated with blood pressure monitoring in the ICU. A subsequent study on monitoring body temperature is envisioned. The training of intensivists is yet prolonged another year to include in the curriculum a comprehensive study of genomics. The number of residents choosing critical care medicine as a career continues to decline, but training of physician assistants and ICU nurse practitioners thrives. Baby boomers refuse to accept rationing of ever-scarcer ICU resources, to the delight of plaintiff attorneys. Instead, the elderly (and their elected officials) demand state-of-the-art ICU care at local hospitals without regard to location or population density. After all, universal health care, as affirmed by the Supreme Court, is a constitutionally protected right. Care in these hospitals is now provided by competent physician assistants, directed via telemedicine by American-trained, state-licensed, board-

certified intensivists from Mumbai (6). Participants of another Round Table Conference in Brussels titled "My ICU in 2026" conclude that all departments of critical care medicine in the United States should be consolidated under a cabinet-level government agency headquartered at the University of Pittsburgh.

Seriously, what will my ICU look like in 10 yrs? We do not know, but then Drs. Fink and Suter do not know either. Go ask the Pythia.

Guillermo Gutierrez, MD, PhD
Vinayak Jha, MD
Pulmonary and Critical Care
Medicine Division
Department of Medicine
The George Washington
University Medical Center
Washington, DC

REFERENCES

1. Fink MP, Suter PM: The future of our specialty: Critical care a decade from now. *Crit Care Med* 2006; 34:1811–1816
2. Quill TE: Terri Schiavo—A tragedy compounded. *N Engl J Med* 2005; 352:1630–1633
3. Angus DC, Kelley MA, Schmitz RJ, et al: Committee on Manpower for Pulmonary and Critical Care Societies (COMPACCS). *JAMA* 2000; 284:2762–2770
4. Anderson MR, Jewett EA, Cull WL, et al: Practice of pediatric critical care medicine: results of the Future of Pediatric Education II survey of sections project. *Pediatr Crit Care Med* 2003; 4:412–417
5. Tobin MJ: American in name, international in scope. *Am J Respir Crit Care Med* 2004; 169: 1083–1085
6. Wachter RM: The "dis-location" of U.S. medicine—The implications of medical outsourcing. *N Engl J Med* 2006; 354:661–665