The Future of Anesthesiology

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Peter and Eva Safar Professor and Chair
Outline

- History
  - Ancient history (anytime before I was born)
  - Recent history (anytime in the last 4 years)
- Present
  - Activators
  - Modulators
- Future
History

Those who cannot remember the past are condemned to repeat it.

This is supposedly about the future...why discuss history?

George Santayana, The Life of Reason, Volume 1, 1905
Ancient

- Texts detailing analgesic and anesthetic uses of medicinal plants are extensive.
- Egyptian papyri, Chinese texts and Babylonian tablets are replete with references to these agents dating from 2700 B.C.
- Dioscorides Pedanius was the first physician to coin the term “anaesthesia” - lack of sensation in Greek.
History

- Ancient
  - Ether (sweet oil of vitriol) first produced in 1539 and perfected in 1757.
  - Sir Humphrey Davy noted (but did not act on his observation) that nitrous oxide might be applied to surgery.
  - It was left to the dentist in Georgia, Crawford Long to administer ether for the first anesthetic in 1842.
History

- Recent

- In 2001, the Department was faced with the choice of agreeing with or fighting the departure of Critical Care Medicine from the fold.

- This decision although difficult was clear...Critical Care was it’s own specialty and deserved the right to be a Department just as Anesthesiology had done years before when splitting from Surgery.
History

Recent

- Thus, the Department now began life without the majority (about 60%) of it’s research focus.
- We retained the core group working on the question of how anesthetics work (topic for another day)
- That left us with a difficult question...

What is the future of our specialty?
History

- Embedded in this question were several others:
  - What are manpower requirements for the next 10-20 years?
  - How concerned should we be about scope of practice issues?
  - Will medical students find Anesthesiology attractive for the right reasons?
  - How do we balance clinical demands and the academic enterprise?
Recent

None of these questions were as important however as one core question which had not been asked in 40 years or more.....

What is the essence of Anesthesiology?
Recent

Anesthesiology at Pitt had traditionally been viewed as a specialty of acute care medicine and this Department was built on that concept.

Focuses more on acute physiologic insults and the management thereof than any other aspect.
History

- Recent
  - However this area was now the province of CCM and not Anesthesiology.
  - Had we lost our direction, our raison d’etre?

- The answer for me was clear....
The Present

Anesthesiology
The Present

- Resurgent interest in the specialty (money?)
- Competition and confusion regarding service provision
- Declining reimbursement
- Declining academic stature
The Present

Percentage of students matching in Anesthesiology

The Present

Medicare Physician Payments
(in millions of dollars)

Source: 2004 Medicare Trustees Report
The Present

$\text{$$ Support per FTE}$

- CMS limiting payments for past 20 years widening gap with privates
- Reimbursement for residents cut in half
- Anesthesiology work values cut by 41% in 1992 with implementation of Hsiao recommendations

Tremper: Anesth Analg, Volume 102(2). February 2006. 517-523
The Present

- Increasing need for services
- Leading role in patient safety
- Broadly enlarging field of pain medicine
- Rapid advances in technology and pharmacology
The annual growth in anesthesiologists declined from 3.6% to 0.6% in the period 1990-1998. Has now recovered to 3.2%.

In this same period, patients over the age of 65 increased by 11% and those over 85 by 34%.

The rate of inpatient procedures in the elderly population is 3X higher.

Thus, need for services is growing faster than supply.
The Present

Professional societies, groups and associations can play an important role in improving patient safety by contributing to the creation of a culture that encourages the identification and prevention of errors. Few professional societies or groups have demonstrated a visible commitment to reducing errors in health care and improving patient safety … The exception most often cited is the work that has been done by anesthesiologists to improve safety and outcomes for patients.
The IOM study was the first governmental study to suggest that preventable errors in medicine were unacceptably high.

Adapted from L Leape
The Present

Board Certified Practitioners

Pain Medicine is enlarging both the scope and the breadth of involvement.

Many specialties now seek to be a part including PM&R, neurology, neurosurgery and GI medicine.

ABMS subspecialty certificates 1995-2004
The Present

- **Technology**
  - Transesophageal Echo
  - Non-invasive cardiac output
  - Depth of anesthesia
  - Ultrasound for regional
  - Ultrasound for central lines

- **Pharmacology**
  - Metabolically neutral drugs
  - Receptor specific drugs
The Future

- Well,... it is about time no???
- Decreasing emphasis on acute care
- Enhanced ability to deliver safe and effective routine care
- Increasing emphasis on patient safety
- Increasing interest and focus in pain medicine
- Increasing interest in and need for regional anesthesia
The Future

- Focus on patient safety - WISER
- WISER - Winter Institute for Simulation Education and Research
- WISER center is dedicated to the broad development of simulation as a method for reducing errors in all aspects of medical care including but not limited to... medicine, nursing, and paramedical training.
The Future
Located in McKee Place
“I hear and I forget. I see and I remember. I do and I understand”
Confucius 551-479 B.C.

16 full scale simulators
2 classrooms
11 Medical training rooms
Integrated simulation

Peter M. Winter Institute for Simulation, Education and Research
The Future

- WISER will continue to develop and extend our leadership in simulation and further develop this tool for the enhancement of patient safety.

- Regional manikins
- Virtual trainers
- Training tools for educators
- National leadership in simulation consortiums
- Team training
The Future

What about Anesthesiology as we know it?

The increasing complexity of OR cases combined with ease of anesthetic administration will lead to a dichotomy in delivery

CRNA’s more responsible for routine (ASA 2 and below) intraoperative care

Anesthesiologists caring for complex patients (ASA 3 and above), regional techniques and providing peri-operative management and direction
The Future

- Remember the original meaning of the term for our specialty... “a lack of sensation”
- But think back to how early “anesthesia” was generated...it was more analgesia and not anesthesia
- Further, the rise of interest in regional anesthesia and intravenous techniques is diminishing the role of general anesthesia
The Future

- Academically, Anesthesiology has always sought a scientific base in clinical medicine.
- We have always had the scientific basis in the search for the mechanisms of general anesthesia (which our group may have solved but that is a talk for another day).
- The clinical basis for our specialty has always been multifocal with two distinct directions - acute care and pain medicine.
The Future

It is fitting that two great men, Dr. Peter Safar and Dr. John Bonica both saw the need for multidisciplinary programs to best develop their fields.
The Future

Perhaps few persons who are not physicians can realize the influence which long-continued and unendurable pain may have on both body and mind. . . Under such torments the temper changes, the most amiable grow irritable, the bravest soldier becomes a coward, and the strongest man is scarcely less nervous than the most hysterical girl.

Silas Mitchell, 1872, Injuries of Nerves and Their Consequences
The Future

- The field of algology or Pain Medicine was developed by an Anesthesiologist, John J Bonica, as a multidisciplinary specialty and should remain that way.

- If we return to our ancient roots (pun intended), we have the opportunity to develop our clinical base in both analgesia and anesthesiology.
The Future

- What is needed for further development?
  - Deep and focused approach to the molecular basis of pain (PCPR)
  - Epidemiological search for genetic components (MM but searching)
  - Better understanding of animal pain models and their roles and limitations (zebrafish?)
The Future

What is needed for further development?

- Tighter integration of clinical pain medicine with the research efforts (Pain fellowship)
- Focused and comprehensive approach to the evaluation and assessment of clinical pain management (not done)
The Future

- Predictions
  - Increased involvement, integration, and direction of pain medicine
  - Increased involvement in the life of the School and the University within the context of research in pain medicine
  - Increased reliance and emphasis on regional anesthesia and further research developments in this area
  - Continued leadership in patient safety
The Future

Predictions (cont.)

- Continued drive to develop and enhance the next generation of simulation and simulators

- Continued development of new and targeted pharmacologic agents to augment traditional opiates for treating pain of all types

- Continued refinements of devices that assess depth of anesthesia and integration of same into automated delivery systems
<table>
<thead>
<tr>
<th>Time Period</th>
<th>Action</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000 BC</td>
<td>Eat this root</td>
<td></td>
</tr>
<tr>
<td>1000 BC</td>
<td>That root is heathen, say this prayer</td>
<td></td>
</tr>
<tr>
<td>1500 AD</td>
<td>That prayer is superstition, drink this potion</td>
<td></td>
</tr>
</tbody>
</table>
Recapitulation

- 1850 AD That potion is snake oil swallow this pill
- 1954 AD That pill is ineffective, take this injection
- 2009 AD That injection is contaminated, eat this organic root
Future’s so bright

Gotta wear shades....