

## Academic Medicine: Dream or Nightmare?

Fred T. Bosman

*University Institute of Pathology, University of Lausanne Medical School, Lausanne, Switzerland*

Academic medicine seems under pressure. The revolutionary changes in the practice of medicine of the last decades, the continuing demands for educational reform, decreased appreciation of the medical profession, budgetary constraints, and a variety of medical ethical issues have shaken up academic medicine and interest in an academic career seems to be waning. In this paper these issues are discussed from the viewpoint of a pathologist. The present situation can also be perceived as a challenge, which offers new opportunities. Better appreciation of educational efforts, more emphasis on the intellectual rather than the technological challenges of modern medicine, reconsideration of the strong tendency for superspecialization, recognition of originality and dedication over academic hierarchy and re-thinking of strategies for development of patient-oriented research are briefly discussed.

**Key words:** *communication; education, medical; ethics, medical; pathology*

I have been in academic medicine all of my life. That is to say, in academic pathology, which might be considered as less clinical than other disciplines but nonetheless very patient-oriented. I enjoy what I do. If I did not, I would never be able to continue doing it. I am convinced that many medical academicians out there like what they do and do it well. Maybe all of us would need to express our satisfaction more loudly. Maybe the impression that academic medicine is in a crisis (1-3) does not correspond to a universal reality, but is a consequence of the outcries of a few of us that have noticed profound changes to which the academic world, somewhat conservative by nature, has some difficulties to adapt. For, in reality, what do we see? There are more medical students than ever before. There is a greater demand for physicians than ever before. Health care budgets continue to increase. More new medical journals are born than old ones abolished. More papers are published than we, even the most efficient of us, can cope with. Are these the signs of a profound crisis?

The missions of academic medicine have not changed. Demands for health care are on the rise everywhere; academic medical centers are called upon to provide the best care possible. Developing better care is a must, not only in terms of developing new knowledge, technology, and medication but also in terms of evaluating the quality of care, increasing the evidence base for current practice, and creating the social, political, and economical infrastructure that would make health care available to everyone on the globe. As judged by the constant stream of publications and the evolution of new technologies, medical

research has not grinded to a halt. Educating tomorrow's physicians remains a primary responsibility of academic medicine and nothing tells us that today's medical graduates are less well-trained than those of the past. Again, why do more than a few of us feel that there is a crisis?

I have no answer to that question. I can contribute my own perception to the discussion and provide some indications as to where we might look for solutions. I have decided to focus my reflections on a few topics that I feel are related to the heart of the problem. A care provider, a scientist, and a teacher – is it realistic to expect all of that from a single person? Teaching or learning – how do we train tomorrow's physicians, academicians or not? Mind or matter – is academic medicine primarily an intellectual effort or a race towards new technology? A keyhole or a landscape – is increasing specialization the way to go or do we need to be more open and integrative? The academic hierarchy – is the current practice in academic medicine really academic? The issue is tissue – is the current movement towards restriction of patient-oriented research for the benefit of our patients?

### Care Provider, Scientist, and Teacher

The notion that none of us, however gifted, can optimally fulfill the three missions of academic medicine – health care, research, and teaching – comes up in many papers on the problems of academic medicine. I will not dwell on the issue as such, because it is not surprising that none of us can be equally good at all three, given the intellectual challenge that comes with the complexities of modern medicine, the pres-

tures on academic staff for original, productive, and high-quality research, the increasing demand for a more professional approach to undergraduate medical teaching, and the organizational convolutions of our academic institutions. The question is, therefore, what we can do about it.

We cannot change the basic facts. What we can do is to acknowledge them openly and to develop career perspectives for academic medical staff that are based on the two criteria: that, for a medical academic, one has to be good at no less than two of the three major aspects of academic medicine, and that all three aspects are equally well appreciated. In the academic ranks, a clinician-teacher, a clinician-scientist, and a scientist-teacher should each be recognized at the same level. I should like to single out the clinician-teacher, who might in reality become an endangered species. Research achievements play a dominant role in promotion and appointment strategies everywhere and for good reasons. Research drives much of what we do in terms of academic achievements. But good teaching is of equal academic importance. I have over the years come to grips with the fact that the half-life of a solid publication is a few years, or if the paper was really good maybe a decade. The duration of the impact of a serious teaching effort is that of an entire professional life. That counts and my personal contacts with under- and graduate students and residents have been immensely satisfying. But satisfaction is not enough. A stronger and structured emphasis on the development of educational skills during graduate education or specialty training would be a good investment (4). Taking into account more explicitly educational experience and skills in the procedures for academic appointments and promotions might have significant impact. Public appreciation of excellence in teaching should form part of the culture in every academic medical center.

### Teaching or Learning

Much has changed in the approach towards the training of competent physicians in the last 25 years. Many undergraduate medical curricula have converted from lecture-based teaching in which the student plays a passive role, to problem-based learning in which the student is an active partner. I will not go into the relative merits of the one or the other. What we are trying to achieve in our new curriculum is a reasonable mixture of different educational approaches without being dogmatic, neither in rejecting classical classroom teaching nor in insisting on the problem-based small-group teaching. Whatever the approach chosen, the emphasis should be just as much on learning to ask the right questions as on how to find the facts or the facts as such. It is important that students realize that knowledge develops precisely because the questions are asked. Stimulating curiosity, helping students to appreciate how scientific data are generated, discussing with them openly the relative value of seemingly established facts is at least as important as preparing them for exams that are based upon memorized textbook content (5). Active confront-

tation with biomedical and clinical research might raise more interest in pursuing an academic career.

### Mind or Matter

Many publications on changes in academic medicine emphasize the enormous impact developing technology has had and will have even more in the near future on the practice of medicine. That fact cannot be denied. The impact that genomics, transcriptomics, and proteomics will have on medicine is still difficult to fathom but will be very significant (6). New imaging techniques will allow not only more detailed analysis of bodily structures in pathological conditions but will also allow functional analysis, insight into what happens at a molecular level without the need for an invasive intervention. Insight in molecular mechanisms responsible for major diseases and new methods of drug design have already put new drugs on the market and what we see today is just the beginning. New biomaterials and bio-implants represent a burgeoning field. In spite of all these marvels I cannot help to wonder whether new technology is not somewhat overrated.

This is an issue that frequently comes up in discussions I have with my staff and the trainees in our institute. What constitutes the difference between a university institute of pathology and a pathology department in a non-teaching hospital? Is it the fact that we dispose of immunohistochemistry, electron microscopy, flow cytometry, and DNA array technology and they do not? There is no doubt that, in general, university institutes of pathology are better equipped to perform more sophisticated analyses. University hospitals generally dispose of a technical infrastructure that allows very complex interventions. But is that what makes a university hospital essentially different? I hope not. More reflection, more emphasis on the evidence base of current medical practice, more efforts to increase the evidence base where this is lacking, more critical discussion, more time for didactic exchange, more time to wonder "why" and to translate this curiosity into productive research are the items that really matter (7). It is not "what we do" but "why we do it" that should make the difference.

### Keyhole or Landscape

I am particularly preoccupied by the ever narrower specialization in academic medicine. With the increasing body of medical knowledge and the complexities of current medical practice, increasing specialization seems unavoidable. The enormous risk we are taking is that every specialist will be fully proficient on his or her own little domain, but no one will remain able to integrate all this knowledge and all these skills into a coherent network of balanced care. This is probably exactly why undergraduate curricula had to reform. Fifty years ago, undergraduate courses were taught by a few experienced clinician-teachers who had a broad overview of the generalities of the major clinical disciplines. Today, super-specialists contribute to the curriculum what they see through their own keyhole, to the best of their knowledge but without an eye for the bigger picture, the landscape of

which they are part. Top notch scientists go a mile deep on a square inch, but often have no interest in what lies next to their focus of interest. I have a strong suspicion that this is more a problem of attitude than it is necessarily inherent to this ever increasing need to specialize. Part of our academic culture should be to foster the capacity to understand what the others are doing, why they are doing it, and the impact that it might have on one's own activities and interests (8). In a way, it is "back to the future": restoring some of the classical intellectual values ascribed to life at a university. Let us be broad!

### Academic Hierarchy

A department needs a head. An institute needs a director. A faculty needs a dean. Administrative responsibility, however, does not necessarily coincide with the academic competence. The director of the institute of pathology, to take as an example my own situation, is not necessarily the ultimate expert for each sub-specialty domain. He might not even be the best teacher or the most respected scientist. And yet, many eminent academicians in medicine (but not only in medicine) find it difficult to generously share their moment in the spotlight with those upon whom they rely. A leader should be generous in sharing responsibilities, in giving credit, in recognizing his limitations. The visionary department head will recruit collaborators that have at least as much potential as he had. Quality should be recognized and honored with academic promotion.

An interesting phenomenon in diagnostic pathology, which merits to be discussed briefly, is the expert. The expert is the pathologist you use as a second line consultant in cases you find difficult to diagnose. I take pathology as an example but the expert occurs in every discipline. You send the slides to the pathologist expert and if all goes well, you get the answer back within a reasonable amount of time. I use the definite article consciously because by definition, the answer of the expert is the final diagnosis. I have very ambivalent feelings about experts in an academic context. Experts cannot be trained. There is no quality control for expert opinions. There are no exams for experts. Experts tend to be apodictic and are not too much inhibited by feelings of doubt. Experts are not supposed to wonder if they are right; if they had wondered, they would never have become the respected experts. And yet, science evolves because questions are asked, doubt is raised, and paradigms are revisited (9). Open scientific discussion, where any question can be asked and arguments are weighted by their scientific value rather than by who is talking, must be, and fortunately often is, an essential element in the daily life of a department. In such a discussion, hierarchy does not count.

### The Issue is Tissue

I have chosen this alliteration because it sounds good and because it concisely describes the nature of the problem of patient-oriented research in pathology. But the issue it touches upon is becoming a problem in every corner of academic medical care. Aca-

ademic medical care is more than the best medicine has to offer today; any tertiary care medical center should be capable of providing patients with the latest validated diagnostic and therapeutic interventions. *Academic* implies that tomorrow's medicine is developed from the care provided today. I have the impression that law makers perceive medicine much as the legal code: you talk about it, you consider all the options, you make a decision, and put it into a code – and that's it. Something like Moses, who descended from the mountain with the Ten Commandments chiseled in granite and validated for eternity. In reality, medical care is in constant evolution. Each encounter with a patient adds to the total body of medical experience accumulated during thousands of years. This occurs partly on an individual basis: every physician learns from encounters with his or her patients – it is called "gaining experience". On a structured basis, this is what we call clinical research. When the patient consults the physician, he or she appeals to this "experience" gained from the accumulated codified patient encounters of all those physicians before us. This appeal implies that the patient inherently authorizes his physician to add the experience gained in his case to the total body of medical knowledge (10). On a structured basis, this implies that the obtained patient data, documents, and bodily materials will be available for research purposes. Without that, developing tomorrow's care is a fiction.

In recent years, this has become very problematic. Patient's rights movement has convinced lawmakers to impose more and more restrictions on the potential use of patient data and biological samples for research purposes. In the aftermath of the Alder Hey scandal, Great Britain is close to accepting a revision of their Human Tissue Act, which might impose tight restrictions on what a pathologist can do with patient material. In most countries, the current situation is that, for the use of tissues for research purposes, either the patient has to give informed consent or a request has to be submitted to a medical ethics committee, which may or may not grant the request. Anonymity is to be guaranteed, which limits the usefulness of such studies because for tissue-oriented research to be clinically relevant the availability of clinical data is absolutely essential (11).

How have we come this far? I do not think that the patient is the problem. When confronted with such a request, patients will almost without exception agree and authorize the use of their tissues for research purposes. My feeling is that the general lack of public education as to how medical knowledge is generated and how medical practice can be improved through systematic evaluation and trial is what is wrong (12). We need to be more communicative. Patients need to know what, why, and how we investigate and how they can benefit from such studies. What is done in silence can easily be perceived as willfully hidden, and what is willfully hidden can easily be taken as "probably illegal". Evidently, very few biomedical or clinical investigators are capable of communicating to the public at large what they are doing and why. We might need to hire communication specialists to get there. Maybe we should con-

sider engaging public relation professionals to systematically improve public perception of the importance of medical research.

### Conclusion

I hope that in my reflections the dream has transpired. Academic life remains an immensely rewarding effort, even though it has become more complex than it used to be. But there are marvelous opportunities that are ready to be seized for the clinician-teacher, the clinician-scientist, and the scientist-teacher. Let us be optimistic, broad minded, and generous. Let us foster talent. Let us be open towards the public at large. It is well worth it.

### References

- 1 Clark J, Smith R. BMJ Publishing Group to launch an international campaign to promote academic medicine. *BMJ*. 2003;327:1001-2.
- 2 Bell J, Working Group of Academy of Medical Sciences. Resuscitating clinical research in the United Kingdom. *BMJ*. 2003;327:1041-3.
- 3 Stewart PM. Academic medicine: a faltering engine. *BMJ*. 2002;324:437-8.
- 4 Spratt C, Walls J. Reflective critique and collaborative practice in evaluation: promoting change in medical education. *Med Teach*. 2003;25:82-8.
- 5 Miller SA, Perrotti W, Silverthorn DU, Dalley AF, Rarey KE. From college to clinic: reasoning over memorization is key for understanding anatomy. *Anat Rec*. 2002;269:69-80.
- 6 Garber K. Genomic medicine. Gene expression tests foretell breast cancer's future. *Science*. 2004;303: 1754-5.
- 7 Snyderman R, Williams RS. Prospective medicine: the next health care transformation. *Acad Med*. 2003;78: 1079-84.
- 8 Fisher ES, Welch HG. Avoiding the unintended consequences of growth in medical care: how might more be worse? *JAMA*. 1999;281:446-53.
- 9 Kligler B, Maizes V, Schachter S, Park CM, Gaudet T, Benn R, et al. Core competencies in integrative medicine for medical school curricula: a proposal. *Acad Med*. 2004;79:521-31.
- 10 Glass KC, Carnevale FA. Learning from the experience of others: ethical issues surrounding the use of clinical data for teaching and other professional activities. *Ann R Coll Physicians Surg Can*. 2002;35:571-3.
- 11 Oosterhuis JW, Coebergh JW, van Veen EB. Tumour banks: well-guarded treasures in the interest of patients. *Nat Rev Cancer*. 2003;3:73-7.
- 12 Phon TH. From genes to therapeutics: educating the government and the public on biomedical sciences-a Singapore experience. *Bioessays*. 2003;25:913-7.

### Correspondence to:

Fred T. Bosman  
University Institute of Pathology  
University of Lausanne Medical School  
Rue du Bugnon 25  
1011 Lausanne, Switzerland  
[fred.bosman@chuv.hospvd.ch](mailto:fred.bosman@chuv.hospvd.ch)