

## An American approach to anaesthesia research and a British perspective

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### Summary

*The organisation of research in the Department of Anesthesiology at the University of Michigan is described and the comments of a British Senior Registrar working within the system are recorded.*

### Key words

*Manpower Research*

The authors have had the opportunity to discuss at length the British and American systems of academic anaesthesia over the period of a year in the United Kingdom and the USA. The presence of a British participant in the American system provided a unique opportunity for assessing the value of the American system from a British viewpoint. This paper is an attempt to present one American approach and to provide a transatlantic perspective.

*The organisation of research in the Department of Anesthesiology, University of Michigan.* The Department of Anesthesiology at the University of Michigan, established in 1952, underwent a major reorganisation in 1976 when Dr Peter J. Cohen accepted the appointment of Professor and Chairman. The long-term goals for the department included excellence in the training of residents, and the establishment of a national reputation in research. The first 2 years were devoted primarily to the improvement of the quality of the residents and of their level of training; having established teaching and patient care on a firm base, attention was directed toward improving the research effort.

In many American institutions, including the University of Michigan, academic advancement of faculty members is guided by a somewhat rigid set of rules. At the University of Michigan there is an 'up or out' policy; if faculty members are not promoted to the level of associate professor with tenure by the end of their eighth year, their appointments at the University are terminated. Criteria for promotion include proven excellence in teaching, clinical responsibilities, administration and research. Proficiency in research is

generally documented by publication of papers in peer reviewed journals. It is therefore essential, to guarantee his retention as a junior faculty member beyond the eighth year, for an individual to publish an average of two papers per year; since most of the faculty in the Anesthesia Department at the University of Michigan are at the level of instructor or assistant professor, a major thrust of the research effort was directed toward fulfilling this obligation.

*The Director.* One of the authors (MLN) was appointed Director of the Research Laboratories in 1977. He is an American Board certified anesthesiologist with post-doctoral training in clinical and laboratory research. The holder of this appointment has 4 days each week free of clinical responsibilities, but has full on-call duties.

*The problems and their solution.* Three faculty members in the department had laboratories and technicians of their own at the time of this appointment and this left the department with less than 50 sq m of laboratory space to serve the remaining twenty-one faculty members. The problem was further compounded because the majority of faculty members had 1 or 1½ days per week free from operating room duties to attend to research, classroom teaching and administrative duties. The fact that a portion of the clinical earnings of the department were returned to its funds to be used in academic endeavours meant that research funding could be established in the absence of substantial external support. All these factors were taken into consideration in coming to the conclusion that the most efficient way to meet departmental objectives would be to establish a 'core anaesthesia research facility'.

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*Equipment and personnel.* A preliminary poll of the members of the department suggested that most of the faculty wished either to perform clinical research, or to carry out laboratory studies on small or medium-sized animals; the existing laboratory space was therefore remodelled into an experimental animal facility and it was equipped with an operating table, physiological monitors, and a blood-gas machine. A number of items of equipment was also designated for clinical research in the operating rooms and these were based in the Core Research Laboratory where cleaning, repair and calibration could be performed. Three technicians were employed; one was assigned to the operating rooms, one to the laboratory, and a third to either area depending on need. A secretary was employed to function as an administrative assistant to relieve investigators of usual burdens related to research management, such as purchasing and scheduling.

#### *The scheme in practice*

*Laboratory experiments.* A prospective investigator discusses his research proposal with the Chairman of the Department and with the Director of the Research Laboratories. He is assigned a budget and the laboratory is made available at a prearranged time. The investigator arrives on the day of a laboratory experiment to find the animal anaesthetised, ventilated, and with the appropriate cannulae in place and he is thus able to begin the interesting and important parts of the experiment immediately.

*Clinical research.* A technician is assigned to the investigator and, on the day of experiment, the clinician arrives to find the appropriate monitors calibrated and attached to the patient. This permits the investigator to direct his attention to the patient and to the conduct of the investigation since the technician remains in the operating room throughout the period of study.

#### *Comment*

The Core Laboratory is now clearly identified as the research centre of the department. It makes a substantial contribution to the educational efforts of the department and its personnel provide a variety of conferences, lectures and journal clubs. The success of the concept is difficult to assess but the number of publications per faculty number has increased since the establishment of the Core Laboratory; in addition, the quality of both faculty and residents currently being hired by the department has improved, although a causal relationship between this fact and the existence of the Core Laboratory is difficult to prove.

*The British contribution.* Members of the staff of British academic centres, usually senior registrars, have come to work in the department for periods of one year since 1976. They have proved to be well trained and to be outstanding teachers, although their research experi-

ence has often been limited. They have always been offered the same research opportunities as those provided to the junior American faculty; almost all of them have taken advantage of this facility and, indeed, a number of them have had a higher research productivity than a number of the American faculty.

#### *A British perspective of the system*

The weekly research conference for faculty members coincided with the second author's first day at the University of Michigan. Clinical duties had started at 0700 hours but, none the less, the majority of the faculty members were present for the evening meeting at which current projects, and possible areas for future research, were discussed. The clinical study started before departure from the United Kingdom was considered worthy of pursuit and coworkers, as well as technical and financial assistance, were immediately forthcoming. It soon became apparent that the Anaesthesia Core Laboratory was the intellectual as well as the social hub of the department.

The project involved a comparison of methods of invasive haemodynamic monitoring and required institutional review before it could be started. The 'committee to review grants for clinical research and investigations involving human beings' was made up of fourteen members, representing all major clinical disciplines, as well as a professor of philosophy at the University, the hospital attorney, and a minister of religion as the non-medical-school affiliated member. The Committee had to be convinced that patient safety was in no way compromised by the study, and also that the study had academic merit. Once the study was underway the writer was also introduced to laboratory research and also participated in clinical studies organised by other members of the department. The weekly conference in the Core Laboratory provided an opportunity to discuss the progress of the various projects and, if anyone was having difficulty with a particular animal preparation or clinical study, more experienced members of the faculty were available to help. This was also the case when the time came for preparing the manuscript for presentation and publication.

*Presentation of results.* The meeting of the American Society of Anesthesiologists held every autumn and the spring meeting of the International Anesthesia Research Society provide both a more formal forum for research presentation and also a guide to the worth of projects, as only a certain portion of submitted papers are accepted for presentation. Most faculty members submit abstracts for presentation and, if these are accepted, attendance at the meeting, with expenses paid, is guaranteed. To some extent, faculty members showing a particular flair for research and prepared to work hard were rewarded by a reduction in clinical responsibilities. Thus, time, financial and technical assistance

were all available, in addition to advice and general encouragement.

The establishment of a Core Research Laboratory where all members of the department, faculty and residents, can do research certainly works well. Time availability in the Core Laboratory is apportioned to members of the department after discussion with the Research Director and Department Chairman, who assess the value and feasibility of the study. A faculty position in the USA is, more or less, equivalent to a consultant position in the United Kingdom; however there is less distinction between clinical and academic appointments within a university hospital.

*Publication and promotion.* There exists a hierarchy of faculty positions in the USA—professor, associate professor, assistant professor and instructor, and there is always an impetus to continue to strive for promotion. The guidelines for promotion have been alluded to earlier in this paper, but, though the system has certain undeniable advantages, there are disadvantages as well. What happens to the individual who is a good teacher, but whose research interest or capabilities are less pronounced? Might the system encourage the 'production' of papers which lack real scientific originality and

merit, because the authors are 'required' to produce a certain number of publications per year? Is multi-authorship (undeniably more prevalent in the United States) a by-product of the system? It must be accepted that to some extent an academic department in the USA mirrors the American way of life—hard work and flair are rewarded but the mediocre or less capable may be cast aside.

The experiences of a British-trained anaesthetist working in the American system have been described but no attempt has been made to contrast the two systems, and indeed the authors do not feel qualified to do so. Time spent by British anaesthetists in the United States is often invaluable, not only from a research and clinical point of view, but also in a social and to some extent political context also. It will be a sad day when immigration restrictions are such that it will no longer be possible for anaesthetists from the United Kingdom to visit the USA for training and research; already circumstances are more difficult than 5 years ago, and the number of UK senior registrars now spending a year in America is greatly reduced. Let us hope such fruitful exchanges do not cease completely.