

Education and Innovation Research in Surgery

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Research in Surgery covers a wide range of activities including the evaluation of evidence for surgical management to basic biological investigations of diseases that a surgeon may encounter. If we accept this very broad definition of research then it involves all surgical trainees and surgeons as part of their total approach to the discipline of surgery.

The Royal College of Surgeons of England strongly supports this concept, and indeed it makes a number of contributions to surgical research. For example, the Research Fellowship Scheme provides support for surgical trainees to undertake a period of time in research. This year is the 10th Anniversary of the Research Fellowship scheme and over this ten years some 300 Research Fellowships have been awarded as well as many Pump Priming grants to new consultants. The College has invested £10 million in this programme, which has been an extremely successful venture. We only wish more money was available as the number of applications is around eight times the number of Fellowships that can be awarded. The College also has a very active Clinical Effectiveness Unit headed by Dr Jan Van Der Meulen which is involved in the evaluation of outcomes of surgical procedures. The Unit also includes the NICE collaborative centre for the evaluation of acute care.

The College has a large Education Department which is responsible for courses such as ATLS and CCrISP, as well

as skills courses ranging from basic skills courses to master classes (over 600 courses were run last year).

As part of the overall research programme it is proposed that the Education Department will establish a research Unit in Surgical Education again as part of the overall plan for research within the College.

For many years the College had an active biological research department with laboratories in the College building. Indeed these laboratories were internationally renowned and could claim one Nobel Prize winner as well as four Fellows of the Royal Society in its lifetime. However, in the early 1990s it was decided that to maintain nationally and internationally competitive laboratories away from the University environment was no longer viable; and despite the distinguished history of the research laboratories the College decided to discontinue these activities and shift support to research on a broader scale around the country through, for example, the Research Fellowship Scheme.

This College has an enormous input into training and education but perhaps it is not widely realised what a major interest it has in supporting research in surgery. The College will continue its active support of research in surgery as it is critical to future developments in surgery at every level.

Continuing Surgical Education – An Orthopaedic Surgeon's View

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On the first day in medical school, my late dean Professor T J Danaraj kept saying that oft repeated phrase "medicine is a life long course". Thirty four years later I realize that this was not to frighten us or make us change our course to history or fine arts. This was as real as it could be and every medical student or would be medical student should be made aware of this dictum or face the dire consequences of ignoring this all important medical doctrine.

"Primum Nil Nocere" is only possible if you practice good patient care. Before you can practice you have to learn

good patient care. One might rationalize that a Medical degree gives you a life long license to practice and you will do no harm. Victor Frankel of New York University said "Orthopaedic knowledge compounds in a manner similar to money invested at 12 percent: it doubles every six years. The average orthopaedic surgeon who finishes residency training at the age of 30 and retires at 65 will be exposed to six doublings"

"How can they keep up?" In many countries notably the United States, recertification is part and parcel of a doctor's life with accumulation of CME points being one

facet of this onerous process. Conferences attract thousands of doctors who occasionally have to sit on the floor, especially on the first day. Didactic lectures, symposia, workshops, posters, video presentations, live surgery on patients or cadavers or animals are all tried and tested teaching methods. Do you learn anything in these mega conventions after battling jetlag, endless queues to register and listening to 'professional' lecturers who often present material which they presented some years ago? The answer is an overwhelming 'Yes'. Even if you learn one new fact that can help you to practice the best patient care it is worth the effort and money.

Books and journals have been used by physicians since the Egyptian civilization and by Hippocrates. The Journal of Bone and Joint Surgery is the cornerstone of orthopaedic surgery and contains the most important advances in this specialty. The journal has recently instituted EBM (Evidence based medicine) and all articles are classified according to five levels of evidence, level 1 being a RCT (randomized controlled trial). In the last few years there has been an explosion of journals dealing with every aspect of orthopaedic surgery and these specialized journals cater to their respective sub specialists. Video journals are also available to surgeons to illustrate surgical techniques.

Orthopaedic surgeons are technically driven and with the advent of new techniques and implants it is imperative that they must keep up. Often the patient is the guinea pig for a new procedure or implant but the more conscientious surgeon will hone his skills by observing and practising on cadavers or in the workshop. Travelling fellowships and short stint fellowships are sought for by aspiring young surgeons or even more senior surgeons.

I have been rambling on about what I did but the modern orthopaedic surgeon has a plethora of choices - the sky is the limit! In the internet era, learning has been simplified and digitized information, simulation and remote access via advanced networks are the way forward. You can use your keyboard and mouse to obtain

virtually any knowledge you want - books, journals, conferences, expert opinions, audiovisual lectures, videos etc are all just a click away.

Internet² is now here to help in the Orthopaedic Surgeon's quest for knowledge (www.internet2.edu). Its applications are infinite and Orthopaedic Surgeons have been at the forefront of developing web-based educational sites throughout the internet revolution. The California Orthopaedic Research Network (CORN) was formed to show the medical potential of advanced networks by demonstrating applications that illustrate real-time streaming of orthopaedic surgery. CORN members use advanced networks of high bandwidth for education, research, and day-to-day interaction, including 'streaming' views of surgery in 'real time', access to large image collections like Visible Human and the use of haptics (teleoperations) to 'sense' remote actions or get operative feedback in physical terms. 3-D dissection and surgery is not a pipedream but a reality with internet². With virtual reality and haptically enabled tools one can practise surgery from the comfort of your room. Videoconferencing with participants at several remote sites is easily performed with internet².

In this era of information technology, there is no excuse to avoid learning or even procrastinate. The high quality of content and the attractive format in which it is delivered makes life-long learning no more a chore but a pleasure. The patient has near equal access to this information and at times they have managed to stump the doctor. The meteoric rise in medical litigation has spurred surgeons to either 'hang up their scalpels' or practise good patient care with an evidence-based approach which also emphasises continuous surgical education. Orthopaedic surgery is a very exciting field and has advanced in leaps and bounds. The days of a generalist Orthopaedic Surgeon are drawing to a close as it is no longer possible to keep up with all the latest advances in orthopaedic surgery. Hence, the future of an Orthopaedic Surgeon will be as a sub-specialist who occasionally reads or learns beyond the definition of their sub-specialty to keep up to date with advances in surgery occurring on a broader level.