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EDITORIAL

Medical Research and Education: Lessons from Osler

Conferences in India invariably begin with formal and flowery inaugurations. One of the hazards of holding a visible official position is that organisers, hard pressed to find 'chief guests' quickly narrow down their search to readily available functionaries. It is inadvisable for scientific conferences to invite politicians and excessively busy public figures, who often do not appear on time, throwing carefully choreographed programs into disarray. Academics are a safer bet. They are decidedly more punctual, often less demanding and almost as voluble as politicians; with the decided advantage of occasionally even having a nodding familiarity with the subject of the conference being inaugurated. I have, over the years, done more than my fair share of inaugurations; most fading rather quickly from memory. The opening formalities at medical conferences have, however, left a lasting impression. Medical practitioners and professionals usually gather for large conclaves in which the pharmaceutical industry and manufacturers of medical equipment hold impressive exhibitions. These are also occasions when many distinguished practitioners of medicine and surgery, with stellar reputations, congregate, albeit briefly. I share with most ordinary people a very healthy respect for the remarkable services rendered by the best amongst our physicians and surgeons. Patients in pain and distress, and I am sure every reader would have an experience to recall, can look back with gratitude on encounters with dedicated practitioners of medicine. This is indeed a profession whose origins bear a strong imprint of pioneers, driven by a desire to understand disease processes, develop strategies for control and prevention and to contribute in every way to the alleviation of human suffering. In recent times, the profession of medicine has lost some of its sheen in public perception. The rising costs of health care, the looming presence of insurance companies, and the influence of large pharmaceutical conglomerates in the promotion of new drugs and in maintaining high levels of pricing have been subjects of concern in the United States. In India too, the prohibitive costs of specialist health care, the rise of corporate hospitals and the perilous state of medical education, overseen by regulatory structures that do not inspire confidence, have all contributed in some measure to a growing unease about the future evolution of medical research and education in the country. Academically inclined clinicians

seem to voice these concerns more frequently and I have heard thoughtful calls for reform in many conferences.

In the West biomedical research has exploded over the last few decades, fuelled in large part by the revolution in the biological sciences. In India biomedical research is hardly a presence, with clinical research practiced only in a few isolated institutions. There is little or no concerted collaboration between clinical researchers and basic scientists who invariably work in different institutions. The concept of a medical school within a university has never found favour in India. Attempts to foster and promote research within our medical institutions have been limited. Understandably, there is little or no discussion on the need to restructure medical education to emphasize the value of research. In what can only be described as a cry in the wilderness, M. G. Deo argued for 'developing research oriented educational programmes both at the undergraduate and postgraduate level' (*Indian J. Med. Res.*, 2009, **130**, 105). Unfortunately, even promotional programs with financial incentives like the Kishore Vaigyanik Protsahan Yojana (KYPY) scheme of the Department of Science and Technology have met with a complete lack of interest amongst students studying medicine. The Medical Council of India (MCI) has always had a stranglehold on medical education policies; its chequered past only ensures an uncertain future. In the United States, students enter medical school after completing a four year undergraduate program, during which the first seeds of interest in research are sown. In India, students enter immediately after high school and are exposed to a curriculum in which even the basic sciences barely merit much attention. It is unsurprising that there is little feeling for the importance of research in medicine.

Is research really a necessary component of medical education? In attempting to think about this question, I was greatly helped by a scholarly colleague who drew my attention to a recent commentary in *The Lancet* (2011, **378**, 1984), which addresses the problems of postgraduate medical education in England. The authors, Pawel Ovseiko and Alastair Buchan of the University of Oxford, remind readers of an address, published a century ago in *The Lancet*, by William Osler 'on the need for hospitals and universities to work closely together'. The authors' principal concern is for the 'ailing postgraduate medical system' in the UK. They appear more comfortable with

the situation of undergraduate medical education, which appears to be 'based on the latest scientific discoveries in laboratories and bedside teaching in hospitals'. The commentary strikes a positive note when the authors remark: 'Universities and hospitals work closely together in the National Institutes of Health Research (NIHR) biomedical research centres and units to translate scientific discoveries from bench to bedside.' The authors are critical of health reform proposals being considered in the UK, which would distance postgraduate medical education from universities and threaten 'clinical academic programmes that combine specialty training with research and teaching'. The importance of linkages between academic institutions and hospitals was recognized by William Osler, whom the authors quote: 'All agree that a study of the problems of disease and the training of men and women in the technique of the art come within the sphere of the university. England has suffered sadly from an absence of great medical faculties such as exist on the continent; and nowhere is this more evident than in the dissociation of the hospital from the university' (Osler, W., *The Lancet*, 1911, **177**, 211). In their recent commentary, Ovseiko and Buchan note with some satisfaction that 'seven generations of Regius Professors later, Osler's ghost would be delighted to see that great advances have been made in the past 100 years. English universities now have some of the best medical faculties in the world'. No sense of satisfaction is possible when surveying the scene of medical research and education in India, where the distancing of medicine from the broad umbrella of universities was complete a long time ago.

William Osler's influence on medical education and research in the West was far reaching. Beginning his career in Canada, he was one of the earliest members of the faculty of the newly founded Johns Hopkins Medical School in 1889. Interestingly, Johns Hopkins University was one of the first in the United States to emphasize research and was a model for J. N. Tata's conception of a 'University of Research' in India, which eventually materialised as the Indian Institute of Science in 1909. Ironically, in the early plans for the Institute a Department of Bacteriology was envisaged; undoubtedly influenced by the dramatic successes of Pasteur and Koch in understanding the biological basis of infectious disease. The department never materialised. Shortly after its founding, a proposal to establish a unit to study tropical medicine was mooted but did not find favour. Medicine and biomedical research was thus firmly excluded from the first major experiment in India to establish a research university. Over the last century, the evolution of medical education and research in India would have hardly met with Osler's approval. Osler's influence in the West stemmed from his great erudition and from his immensely popular book, *The Principles and Practice of Medicine* published in 1892. An essay commemorating the centennial of its publication notes: 'The multiplicity of literary and historical allusions that embellishes the textbook bears testimony to Osler's firm grounding in the classics and

his knowledge of, and passion for, the history of medicine' (Golden, R. L., *Ann. Int. Med.*, 1992, **116**, 255). In his historical account, Golden recounts the influence of Osler's book on Frederick T. Gates, 'a member of John T. Rockefeller's philanthropic staff', who read it 'from cover to cover during his summer vacation', in 1897. Influenced by Osler's 'scientific candor and literary style', Gates wrote a memorandum to Rockefeller in which he 'aimed to show him the actual condition of medicine in the United States and the world as disclosed by Dr Osler's book'. Golden quotes Gates: 'Eminent physicians were consulted ... and out of the wide consultation the Rockefeller Institute of Medical Research came into being. It had its origins in Dr Osler's perfectly frank disclosure of the very narrow limitations of ascertained truth in medicine as it existed in 1897.' Reading Golden's retrospective on Osler and his textbook, it is clear that his focus on pathology and his 'emphasis on morbid anatomy' and his therapeutic conservatism clearly bore testimony to his accurate assessment of the state of medical knowledge at the end of the 19th century. He quotes Osler's famous aphorism: 'The desire to take medicine is one feature which distinguishes man, the animal, from his fellow creatures.' Ehrlich and chemotherapy were yet to appear on the horizon when Osler wrote his book. Osler's firm conviction on the need for research, integrated with the teaching of medicine, has influenced the generations that followed, leading to a century of unparalleled progress in medicine. Yet, a sense of unease prevails even though we are well launched into a new century.

The dramatic advances in science have yet to translate into the kind of dividends expected from the large public investments in biomedical research in the West. The escalating costs of pharmaceutical research and the thin pipeline of potential new drugs has been widely discussed. Gene and stem cell therapies continue to promise but the road to success appears uphill and rocky. The situation in Indian biomedical research is grim. There are few connections between science, engineering and medicine. There is little visible enthusiasm for reform of medical education and research amongst the academic community. The enormous contributions made by advances in science, over the last century, to the practice of medicine are hardly appreciated in undergraduate medical courses, where neither science nor the history of medicine merit more than a cursory mention. The need to emphasise research in the medical curriculum must be deeply felt if any reform is to be expected. If this is not done the gulf between the sciences and medicine will become unbridgeable in the future. The recent *Lancet* commentary noted that 'Osler's call for hospitals and universities to work closely together remains as poignant today as it was 100 years ago'. They go on to quote Osler: 'The truth is we need an active invasion of the hospitals by universities'. Maybe there are still lessons that we can learn from Osler.

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